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BETTER FRUIT

VOLUME XIII

AUGUST, 1918

NUMBER 2

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VOLUME XIII

PORTLAND, OREGON, AUGUST 1, 1918

NUMBER 2

The Codling Moth Situation

By Leroy Childs, Entomologist and Pathologist, Hood River Experiment Station

GROWERS in the Northwest should give extra attention to the control of the codling moth during the remainder of the season. Up to the present time the summer of 1918 has been extremely favorable for the development of the codling moth. Mixed hot and cold spells during late May and early June resulted in the breaking up of the first brood, so that the appearance of the second will be far from regular. The warm dry weather of late June and July permitted the rapid development of the worms with a result moths of the second generation are appearing nearly fifteen days earlier than they have at any time during the past five years. This fact, together with the fact that there are many very late moths of the first generation to still appear and deposit eggs, indicates that there will be almost continuous egg hatching from about the first of August until nearly picking time. Where worms of the first brood have been conspicuous the orchardist should by all means use two lead sprays this fall. The first to be on the trees by the first of August, as the latest date, and the second to be applied about the 25th of the same month.

There is considerable difference in the development of the moths in the different apple-growing sections, so that these dates are only approximations. Every apple-growing section needs an expert investigator to follow through the life history of the codling moth each season that the timing of the sprays may correspond to the activities of the insects. This activity not only varies widely from one season to another, but there is apparently much variation in the same season in the different sections. These differences are probably due to temperatures varying on account of altitudinal, coastal and interior influences. During the past five years at Hood River it has been found that a variation of a full month has occurred in the appearance of the second brood of worms. When we consider that a lead spray is not very effective for a period longer than twenty to twenty-five days the reliance upon a set date for applying the summer spray (which is practiced by a great many orchardists) is entirely un-

reliable as far as control is concerned. Degree of control attained, provided the spray is applied thoroughly, depends entirely upon the timing of the spraying. It might be asked: What material difference would it make if the spray was applied even ten or twelve days before egg hatching? The answer would be in terms of obtainable results in ordinary seasons of infestation, the difference between complete control as against one-half or even less control. In other words, an application of spray cannot be completely effective during a period not to exceed twenty days at this time of the year, owing to the rapid growth of the fruit and its necessary partial uncovering, the spray does not expand with fruit expansion. If a spray is applied ten days in advance of the brood hatch one-half of its complete effectiveness is forfeited at the time the application is made. Effectiveness in codling-moth control rapidly

decreases at the end of twenty days. Egg hatching activity, on the other hand, under normal conditions, is usually approaching its height ten to twelve days following the deposition of the first eggs. At this time, then, a maximum need of protection is demanded and the effectiveness of the spray is rapidly decreasing. A very great proportion of the losses that result in Northwestern apple orchards and the poor control obtained on the part of orchardists can be traced to this source.

The reduction of the time of application of a spray to the shortest period preceding egg hatching will only be productive of good results. Very close timing in the case of protracted egg hatching will often save an extra application of spray and much expense. An intimate knowledge of the insects' seasonal habits must be known to permit the taking of these advantages.

A Labor Saver That Should Be Investigated

By D. E. Fryer, Seattle, Washington

IN these days, while the boys are "Over There," and while labor is so scarce and expensive, it is highly advisable for every association and every warehouse man handling fruit to investigate carefully what can be accomplished by means of conveyors. Gravity is one of nature's forces which is always present and always benign exerted with equal power; and he is a wise man who lets it do his work. For moving the fruit into the warehouse—moving it from packers to nailers, and from floor to floor, a well-arranged conveying system will save from twenty to one hundred per cent of its cost in a single season; and what is more, it will result in giving better service and in systematizing the work so as to speed up the entire operation and increase its capacity very materially, and all this on a basis of greater efficiency.

The gravity conveyor made of rollers operating on ball bearings is what has made the use of conveying systems a practical success in the apple business. These rollers are usually about 16 inches long, 2½ to 3 inches in diameter, and are placed in steel frames

3, 4 or 6 inches on centers. These sections are made in lengths from six to twelve feet and are fastened end to end by detachable couplings. They are supported by adjustable supports, and as boxes of apples will run on these rollers at a pitch of from one-quarter to one-half inch to the foot, it is a very simple matter by adjusting the supports to convey the apples from one place to another with practically no labor. These rollers are made of steel or wood. While the steel is more durable, it costs more and is heavier. Wood will wear out in time, but if the wood is maple and properly treated and cared for, it will give long and satisfactory service; and most all those who have used them are more than convinced that the saving in price is justified by the service. Tapered rollers are employed at curves and it is remarkable to see how easily and smoothly the boxes will glide around the corners here and there all alone and without ever falling or giving trouble.

In connection with the gravity conveyors, inclined elevators are fre-

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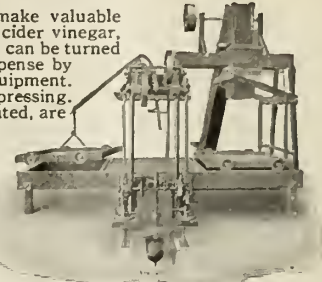
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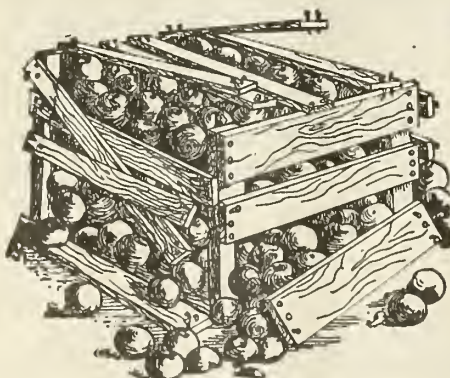
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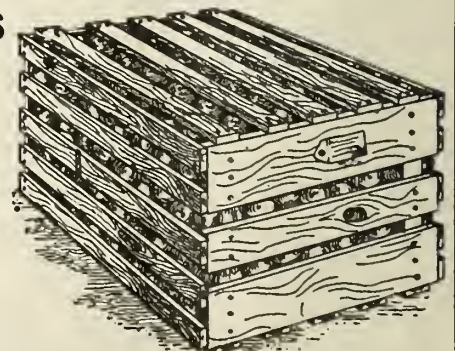
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The Conserving of Fruits by Scientific Dehydration

By Francesca Baltes

IN the East Gallery of the Grand Central Terminal in New York is the Mrs. Oliver Harriman Food Research Laboratory, a daily exhibit of a practical wartime measure and the answer to one of the biggest conservation questions today. To the fruit-grower, who does not need to be told the advantages of drying, the possibilities that dehydration has to offer will be of decided interest. Not that dehydration is something totally new,—in various forms it has been practiced from time immemorial. The savage tribes of Africa, the people of ancient Egypt, and the American Indians all very sensibly preserved their food by drying. The custom is a well-known one in Italy and Japan, and, in our own United States, the fruit-growers of California resort to sun-drying to lessen the waste of their abundant crops. But it is only of late that dehydration has come to make the method practicable everywhere. The farmer needs assurance that his labors will not be half wasted if he is expected to turn all his efforts to greater production. It is an ironical fact that, in the year 1917, in spite of unusual conservation and greater production, the amount of foodstuffs wasted was greatly increased. Such an occurrence dehydration would make impossible, and the amount of money expended would be lessened as well.

The laboratory exhibit, which has the personal attention of Mrs. Harriman and is due entirely to her untiring patriotic efforts, has been open to the public since last November, and the big grey machine there has been receiving fruits and vegetables of all kinds and turning them out in dehydrated form. Last summer Mrs. Harriman became interested in the experiments that were being made in Westchester, New York, for the County Committee for General Safety. Realizing the great possibilities in the field of dehydration, she and the experimenter, Mr. Clarence V. Ekroth, Assistant Chief Chemist to the Bureau of Foods and Drugs, commenced the extensive research that now shows such wonderful results. For the summer of 1917 Mrs. Harriman generously gave over the ground floor of her town house to the work. The present laboratory, at 25 Vanderbilt Avenue, is under the direction of Mr. Ekroth and is conducted in co-operation with the Bureau of Foods and Drugs of the New York City Health Department; there is continuous investigation of the subject of dehydration in an endeavor to arouse public interest in the project. The most practical methods are being worked out and incorporated with new suggestions resulting from experiments and with the ideas of the director, the object being to remove the usual difficulties involved in a new undertaking. Others may profit by the research and be saved much hard experience in the future. For dehydration has come to stay, as this exhibit very convincingly shows.

Dehydration, of course, simply means the extraction of all moisture; it goes farther than drying and evaporating. An attractively arranged table at the laboratory holds jars of dehydrated beans, corn, pears, peaches, apples, strawberries, and numerous other vegetables and fruits from which every bit of moisture has been scientifically removed. The same specimens in reconstituted form are shown nearby, apparently the fresh articles. It merely proves that, by the simple addition of water, a dehydrated product may be restored not only to its original appearance, but also with no loss of flavor, color, form, or even fragrance. Dehydrated strawberries have the same inviting odor as those ripening in the fields. The food value is absolutely unimpaired.

The advantages offered by dehydration are very definite ones. Its great object is to eliminate waste in every possible way. It is now generally com-

prehended that, to prevent a world famine, we must keep up the food supply; for at least three years to come, more production will be needed. Our Allies have only about thirty-four per cent of the food they will need; and it is becoming plain that the field of production is a limited one, for there is not sufficient labor to increase it. The one alternative is to save—to prevent waste. The elimination of waste in every possible way is precisely the object of dehydration. As it is now, there is about sixty per cent. waste between the grower and the consumer—a circumstance that, under present conditions, we can no longer afford to tolerate. Perishable food must be saved—before it perishes. Besides embodying practically every advantage obtained by canning, preserving, and cold storage, dehydration possesses certain greater advantages. It prevents loss by decay and freezing (these products will not freeze, nor will



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Mrs. Oliver Harriman, standing before her dehydrating machine, is removing a tray of thoroughly dehydrated material and demonstrating this scientific process of conserving fruits and vegetables.

high temperature cause them to rot); it also saves the weight and cost of containers to a great extent. The cost of a suitable paper container is very slight—only a few cents for a pound of dehydrated material, as against fifty cents for tin for the bulkier fresh material. With the present shortage of glass and tin in view, this is a point to be considered. Since weight is very much decreased, dehydration saves freight; one hundred pounds of fresh fruit may be reduced to an average of ten pounds by complete drying. Usually a shrinkage of about five-sixths may be assumed; this means a considerable saving in space when shipping and storing. The container is a waxed cardboard carton. As another advantage, dehydration saves car space, and so lessens railroad congestion. A shipment of two hundred tons of dehydrated potatoes, for example, would be equivalent to a cargo of one thousand tons of the fresh product.

The machine that accomplishes the process of dehydration can take care of half a ton of fresh material every twenty-four hours. It occupies a space of ten square feet and requires a room not smaller than twenty feet square for its efficient operation. Another room for the workers who prepare the food is also necessary. The fruit (or vegetables), pared and sliced, is put in a shelved compartment on wire trays and becomes thoroughly dehydrated in from one and one-half to three hours, according to the nature of the product. The free circulation of moist air (and this is really more important than heat) depends upon a fan blower at the back of the machine. The temperature is kept around one hundred and forty degrees Fahrenheit most of the time; this, being the pasteurization point, insures the destruction of the micro-organisms present. All of the air used is filtered; as it takes up moisture, it is continually replaced by fresh air, thus utilizing the moisture evaporated from the fruit to humidify the air. Dehydrated foods, which are completely dried and rarely contain over three per cent. moisture, will readily absorb moisture from the air if left uncovered. It is therefore important that they be speedily packed in airtight containers. Stored in this manner, they keep indefinitely. To reconstitute a dehydrated vegetable or fruit, it is merely necessary to place it in water,—cool, tepid, or boiling, depending on the material—and in from twenty minutes to four hours it is restored with all of its original appearance and flavor. The cellular structure has not been in the least impaired by the process. Properly dehydrated fruits and vegetables are really entitled to be placed in a class above the "evaporated" product, which is of greater moisture content and frequently possesses properties noticeably different from and inferior to those of the natural article.

Dehydration is playing an important rôle in conservation of foods for the City of New York—for the waste in the food depots has hitherto amounted to the startling average of more than one

million tons a month. As chairman of the Food Committee of the Mayor's Committee of Women on National Defense, Mrs. Harriman's plans for an educational kitchen had the hearty approval of both Mr. Hoover and Mr. Williams. The city gave over the City College at Lexington Avenue and Twenty-third Street for the use of her committee, and through the co-operation of the Board of Health and the city officials, the food waste was made available for dehydration. The donated building was opened in May as an educational kitchen for the public, where expert demonstrators show the use of the various kinds of foods and substitutes. A regularly rotating weekly program provides for different demonstrations on different days. Monday is devoted to wheat substitutes, Tuesday to dry and wet milk and children's diet, Wednesday to the dehydration of vegetables and fruits and cooking of the same, Thursday to wheat substitutes, Friday to the dehydration of fruits and vegetables and canning of the same, and Saturday to ice cream, war cakes, and simple desserts. The dried foods are sold for home use at cost prices, and war food bulletins are on sale at five cents a piece.

As for the supply from the food depots, heretofore discarded, it is so handled that there is very little waste. About twenty-five per cent of it is actually good. The rest, which is partially usable may be dehydrated to provide fodder for cattle and stock, as is done in Germany.

Just as the Civil War led to the perfecting of condensed milk, so the present world war seems to be the impetus to this valuable process of dehydration. It is, indeed, on account of the war that the desirable advantages of dehydrated fruits and vegetables may be more clearly viewed. Just now, when every bit of shipping space must be utilized to the greatest extent, when weight and expense and liability to deterioration are each problems to be gravely considered, dehydration comes with the appearance of a godsend. It means that each car and ship will be able to transport from ten to fifteen times as much as they do now, and neither the heat of summer nor the cold of winter will have the slightest injurious effect. A little investigation shows the problem of increased production to be rather a serious one and points out the urgent need of conservation. For some time the rural and urban districts have been tending to equalize in population, and in two years more the city numbers actually promise to be slightly larger than the rural. These points are clearly shown at the Grand Central laboratory exhibit by means of a chart. Other charts for the enlightenment of the visitor show the great depletion of the foreign grain supply, which must be met by America if it is to be met at all, and the large percentage of exports without a compensating amount of imports.

For army purposes, dehydrated foods are ideally adapted. The fact that they keep perfectly is, in addition to their other advantages, one of the best rec-

ommendations, as it is closely related to the hygienic welfare of the camp. With refrigeration plants facing a lack of ammonia, cold storage is hardly to be depended upon. The ease with which dehydrated foods may be prepared also makes them a convenience. It is interesting to know that one hundred pounds of dehydrated soup mixture (which is just as savory as that freshly made) will feed three thousand hungry soldiers. Our enemy knows the value of dehydrated foods in war times, and, if we are sensible, we shall profit by his experience in this matter. Directly after the start of the war, Germany made haste to add to four hundred and eighty dehydrating plants then in operation, two hundred and forty-six more, and at present it has more than two thousand. Dehydrated foods are keeping alive both army and civilian population, and even the German cattle. The English and French armies, too, use millions of pounds of dehydrated fruit and vegetables.

The dehydrator that has been described is not intended to meet the needs of the average family in a small home. It is rather for the large farm, for the community kitchen, for whatever enterprise can handle big quantities. It has been very successfully installed on country estates; and, for those who prefer it, there is a smaller model that is just half the size of the one described. The cost of installation amounts to about \$1500; this includes the auxiliary preparatory machinery, such as cutters and peelers. If operated to full capacity, the machine will dehydrate one hundred and fifty thousand pounds of material a year. There should be two workers. Inclusive of wages, the small dehydrating plant may be run at an average cost of a cent for a pound of fresh material; exclusive of wages, the cost of operation will be only five-tenths of a cent a pound. Such efficient conservation of food—and on food depends our strength and that of our Allies—presents a truly practical and patriotic opportunity.

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Ben Franklin said: "Plow deep while sluggards sleep and you'll have corn to sell and keep." If Franklin had seen a tractor plow, he'd have said, "Don't wait; go buy one now."—*California Cultivator*.

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You can at least be in the second line of defense—be a war saver.

Evaporation of Prunes and Economical Suggestions

By A. F. Barss, Assistant Professor of Pomology Oregon Agricultural College

IN view of the present outlook for an especially large crop of prunes quite generally throughout the prune-growing sections of the Northwest, it seems advisable to prepare ourselves in time so that the entire crop may be saved. In the case of many young prune orchards this will be the first year of bearing. For those men who are to evaporate prunes for the first time, the following remarks will save them many mistakes and at the same time prove most timely and valuable to more experienced evaporator men by giving them suggestions for changing and improving their present methods. Before actual evaporation, a building should be supplied and properly equipped. It is realized, however, that this is no time to begin to think about building, for unless already well under way it would be next to impossible to have such a building in shape for this season's run. It cannot be too strongly urged, however, in the face of the present labor conditions that everyone so readjust and systematize the work in the drier as to get the maximum results with what labor is available. By cutting down on extra handling and introducing mechanical conveniences it will frequently be possible to save on man power without loss of efficiency.

When we realize that it is impossible to produce a high-grade evaporated product from inferior fresh fruit, we can see the importance of care in harvesting. If the dried product is to have superior flavor and to give the greatest yield, it is important that the fruit be allowed to ripen on the trees and to be picked up only when it has fallen naturally or after a very light shaking. Experimental evidence proves beyond doubt that the prunes which do not ripen on the tree are much inferior to those which are harvested only after falling to the ground. In view of this fact it is essential for most satisfactory results that the season of picking be not thrown in advance of the normal season, but delayed until sufficient prunes have fallen to the ground to make a first picking practicable. The weather records for a number of years show that the earlier picking does not tend to avoid the rain any more than picking at the natural season. When we consider, then, that the most important time in the life of the prune to give it size, quality and yield per acre, is during the last few days of maturity, we can see the importance of delaying the picking. Heavy shaking except just before the last picking is to be discouraged. A light shaking, however, before each picking will merely tend to remove those prunes which would be falling naturally within a short time in case of a light wind. The prunes should be gathered into small slatted crates, for in case of moist, warm weather at time of harvesting, those prunes which are picked into large lug boxes and allowed to remain for any

length of time in these before being placed in the evaporator deteriorate very rapidly. Such weather conditions are most favorable for the spread of brown rot and also tend to increase fermentation to such a degree as to cause a material loss of sugar and weight in the final dried product.

It must be borne in mind that regardless of the way in which the fruit is handled in the field or the kind of container into which it is gathered, the least delay between the time of harvesting and actual placing of the fruit in the evaporating chamber, the better will be the results. In regard to what constitutes preparation for evaporation there is a wide difference of opinion. Excellent results have been obtained by evaporator men each following a different practice. Certain suggestions, however, may be followed to advantage. Little, if any, grading previous to tray-ing has been practiced in the Northwest. It appears that there is such a wide variation in the time required to dry the large and small prunes or to dry the more matured as opposed to the greener prunes, that it would seem wise to grade the fruit by dividing into at least three sizes. This may be done at less expense by the use of a mechanical grader, but few would find it possible to install such a machine at this time. Home-made hand-grading devices which will do satisfactory work may be substituted. By grading, all the prunes on any one tray would be of approximately the same size. This would give more even drying, it not being necessary to over-dry some of the smaller prunes because of the presence of larger prunes on the same tray. Such a practice in itself would increase the percentage of dried fruit obtained from a given weight of fresh. While it may not be possible to install a grading system at this time, it will at least be found worth while to carefully hand pick the fruit, removing any worthless or decayed fruit, the presence of which on a tray would merely tend to lower the quality of the whole as well as occupy space on a tray which might be used to advantage by first-class fruit.

The particular method of handling the prunes before spreading on the trays seems to differ with the section, most of the growers in a given section following the same practice, there being no one accepted method used in all regions alike. Some growers dip in hot lye water, some in boiling water, some in cold water and some tray the prunes as they come in from the orchard without any dipping. An interesting point is that all of these men are able to command standard prices for their dried product. While it might be stated that the most common practice is to dip the prunes in a lye solution, many packers strongly discourage the use of lye. It has been found by experimentation that when properly regulated, not only may lye dipping not injure the dried product, but it does materially tend to re-

duce on the time of drying. Where lye is used the average strength is one pound of lye to from thirty to fifty gallons of water. Some use it much stronger than this, but where arrangement is made to keep the water actively boiling, a smaller amount of lye will do the same work as more lye in colder water. Lye dipping, unless the prunes have previously been graded, will tend to accentuate uneven drying since the ripe prunes will tend to check much more easily than green prunes. For this reason and because of the fact that a strong lye solution is often used to conceal the effects of serious brown-rot infection, the use of actively boiling water in place of lye water is to be commended. While there seems to be no serious objection to the use of lye in small quantities followed by thorough rinsing, nevertheless lye has in the past been used improperly so widely that it has quite largely fallen into disfavor and the use of boiling water substituted for it. In addition to the first dipping a thorough rinsing in one or two waters is desirable for sanitary reasons.

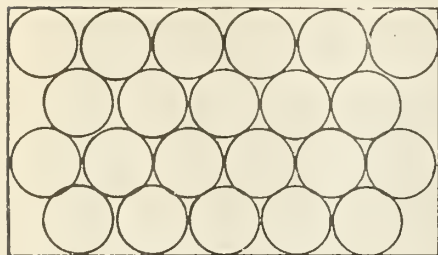
While those growers who are operating small evaporators cannot well afford to install modern power machinery for dipping and tray-ing, those evaporating on a larger scale will find it decidedly to their advantage to do away with the hand outfits. A comparison of the efficiency of the two methods leaves no doubt but that where the larger machine can be kept occupied through handling large quantities of fruit, it should be installed. This is of especial importance this season when any means which can be employed to reduce hand labor will be essential. Where the dipping and tray-ing device can be so arranged as to allow for a careful inspection of the fruit, either before dipping or after it is placed on the tray, a great deal of space which might be wasted will be saved by removing all immature and decayed fruit and filling the trays completely. After the fruit is spread on the trays it should be placed in the evaporating chamber as soon as possible.

There are two essential requirements to evaporation—heated air which is not saturated and some means of passing this air over the material to be evaporated. Whether this air is heated by means of stoves, furnaces or steam and whether circulated naturally or by means of a fan, the principles employed are the same. It must be remembered that the warmer the air, the more moisture it will absorb. If then the moisture is not being removed properly from the fruit, the remedy will be either to increase the temperature of the air or its circulation. There is a limit, however, to the heat which prunes will stand and not scorch. The temperature at the hottest end, where the finished product will be removed, should for best results rarely pass 180

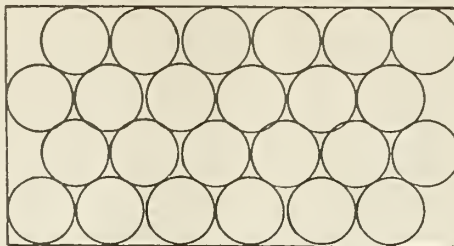
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Illustrations for Apple Packs in the Standard Apple Box

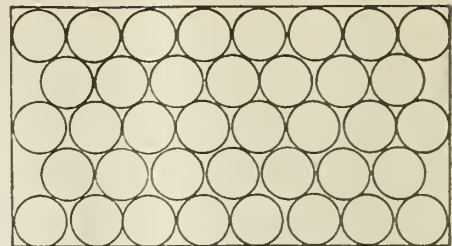
10½x11½x18 Inches, Inside Measurement



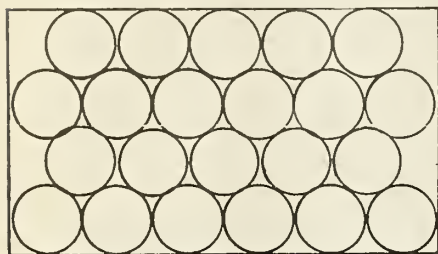
First and Third Layers



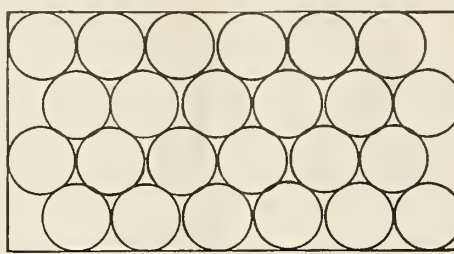
First and Third Layers



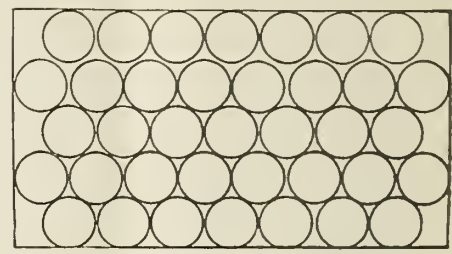
First, Third and Fifth Layers



Second and Fourth Layers
Diagonal 2/2 pack, 4 layers, 88 apples



Second and Fourth Layers
Showing diagonal 2/2 pack, 4 layers, 96 apples



Second and Fourth Layers
3/2 pack, 4½ tier, 5 layers, 188 apples
If layers are reversed there will be 187 apples

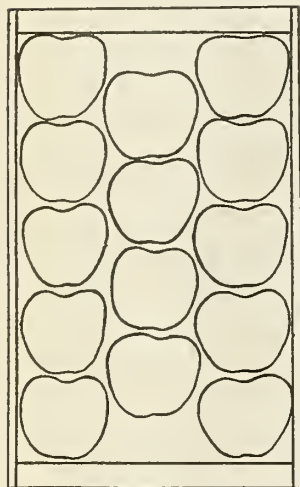


Figure 1—41 Apples
Northwest Standard Box

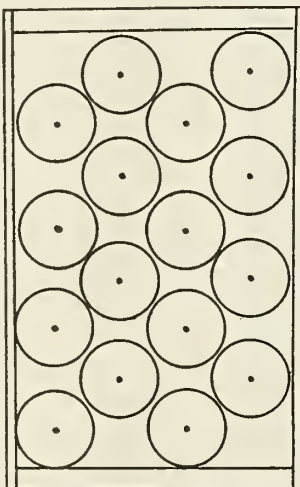


Figure 7—64 Apples
Northwest Standard Box

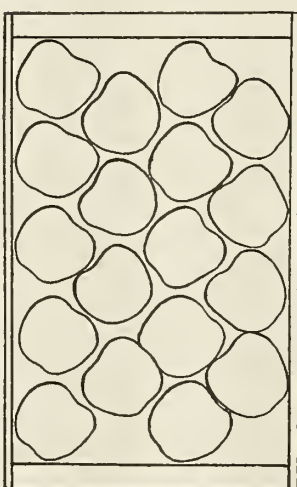


Figure 8—72 Apples
Northwest Standard Box

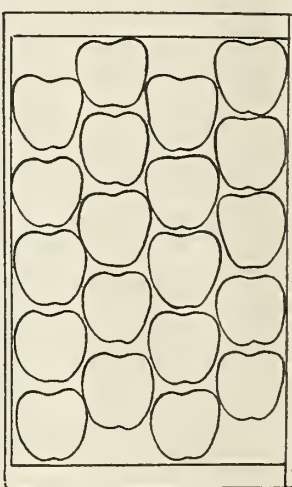


Figure 10—80 Apples
Northwest Standard Box

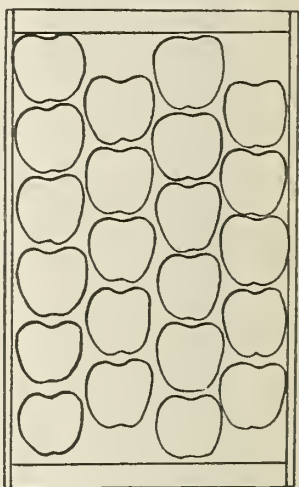


Figure 12—88 Apples
Northwest Standard Box

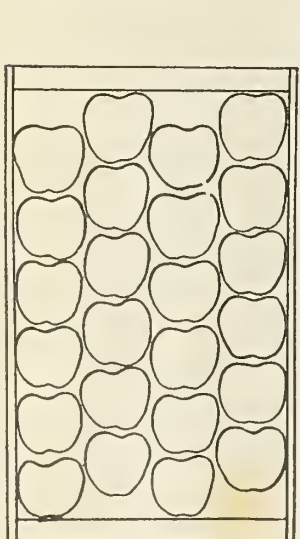


Figure 13—96 Apples
Northwest Standard Box

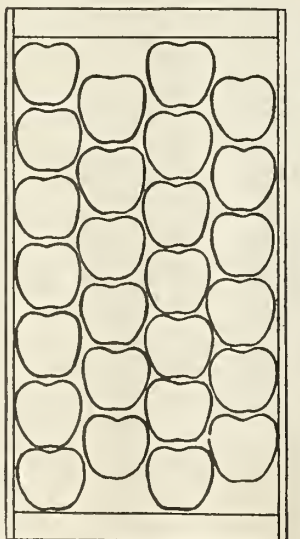


Figure 16—104 Apples
Northwest Standard Box

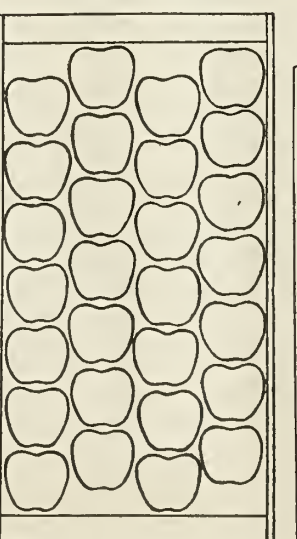


Figure 18—112 Apples
Northwest Standard Box

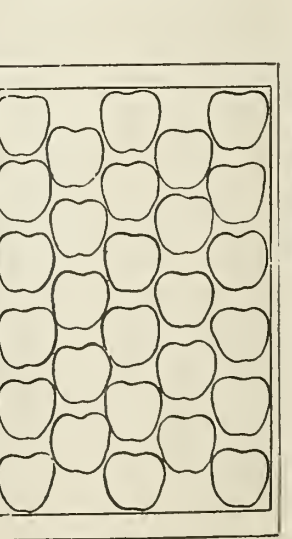


Figure 24—138 Apples
Northwest Standard Box

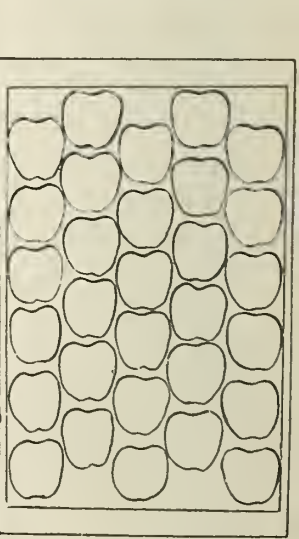


Figure 26—150 Apples
Northwest Standard Box

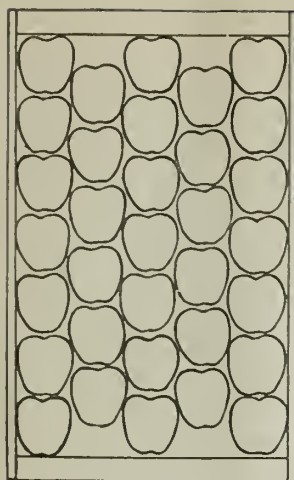


Figure 28—163 Apples
Northwest Standard Box

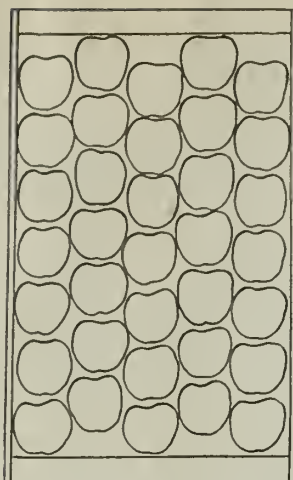


Figure 29—175 Apples
Northwest Standard Box

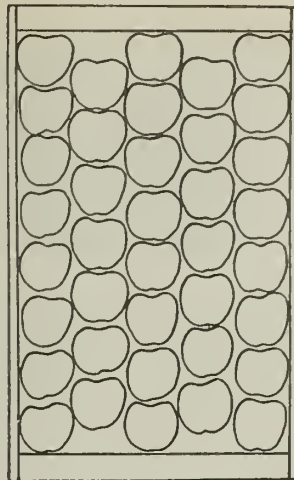
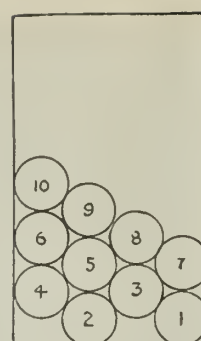
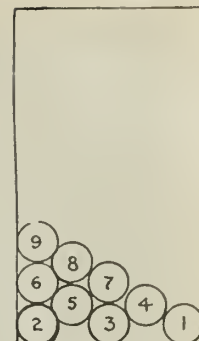


Figure 31—188 Apples
Northwest Standard Box



How to Start a 2/2
Diagonal Pack



How to Start a 3/2
Diagonal Pack

Grading Rules and Regulations Season 1918

Washington Standard Pack

FIRST GRADE, Grade No. 1 or Extra Fancy apples are defined as sound, smooth, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worms, worm stings, worm holes, spray burn, limb rub, visible water core, skin puncture or skin broken at stem, but slight russetting within the basin of the stem will be permitted.

Second Grade, Grade No. 2 or Fancy Apples are defined as apples complying with the requirements for first grade apples except that slight sun scald or other blemishes not more than skin deep shall be permitted up to a total of 10 per cent of the surface of the apple.

Third Grade, Grade No. 3 or C Grade Apples shall include all remaining apples free from infection excepting that two stings to each apple shall be permitted and if shipped in closed packages shall be marked "Third Grade or C Grade."

Combination Grade may also include all other apple varieties not provided for in First and Second Grades.

When Second and Third Grade apples are packed together, the packages must be marked "Combination Second and Third Grade."

When First, Second and Third Grade apples are packed together, the package must be marked "Orchard Run," but Orchard Run packages must not contain any apples that would not meet the requirements of Third Grade.

Summer and Early Fall Varieties: Summer varieties such as Astrachan, Bailey's Sweet, Beitigheimer, Duchess, Early Harvest, Red June, Strawberry, Twenty Ounce Pippin, Yellow Transparent and kindred varieties, not otherwise specified in these grading rules, together with early fall varieties such as Alexander, Blue Pearmain, Wolf River, Spokane Beauty, Fall Pippin, Waxen, Tolman Sweet, Sweet Bough and other varieties not provided for in these grading rules, as grown in sections of early maturity, shall be packed in accordance with the grading rules covering Fancy

Grade as to defects but regardless of color.

The following varieties shall be admitted to the Extra Fancy and Fancy Grades, subject to the color requirements herewith specified:

SOLID RED VARIETIES

	Extra	Fancy
Aiken Red	75%	25%
Arkansas Black	75%	25%
Baldwin	75%	25%
Black Ben Davis	75%	25%
Gano	75%	25%
King David	75%	25%
Spitzenberg (Esopus)	75%	25%
Vanderpool	75%	25%
Winesap	75%	25%
Black Twig	50%	15%
McIntosh Red	50%	15%

STRIPED OR PARTIAL RED VARIETIES

	Extra	Fancy	Fancy
Delicious	66 2/3%	15%	
Jonathan	66 2/3%	15%	
Stayman	66 2/3%	15%	
Ben Davis	50%	10%	
Hubbardston	50%	10%	
Genito	50%	10%	
Missouri Pippin	50%	10%	
Northern Spy	50%	10%	
Rainier	50%	10%	
Rome Beauty	50%	no color	
Snow	50%	10%	
Wagener	50%	10%	
Wealthy	50%	10%	
York Imperial	50%	10%	
Gravenstein	25%	10%	
Jeffrey	25%	10%	
King of Tompkins County	25%	10%	

RED CHEEKED OR BLUSHED VARIETIES

Perceptibly blushed cheek.	Tinge color
Hyde's King.	
Maiden Blush.	
Red Cheeked Pippin.	
Perceptibly blushed cheek.	
Characteristic color.	
Winter Banana.	

YELLOW OR GREEN VARIETIES

Extra Fancy—Characteristic color.	
Fancy—Characteristic color.	
Grimes Golden.	
Yellow Newtown.	
Cox's Orange Pippin.	
Ortley.	
White Winter Pearmain.	
Yellow Bellefeur.	
Northwestern Greening.	
Rhode Island Greening.	

All apples packed otherwise than according to the foregoing rules shall be accompanied by a printed description of the contents on each package.

The term "Worm Stings," as used in the above rules, shall be interpreted to mean "healed over stings," as the heal-

ing over of the sting is the only evidence we have to show that the so-called sting is not infected.

Grading rules recommended by regularly elected delegates to the Apple Grade and Pack Conference held in Spokane November 23, 1916, and adopted by the advisory Board of the State Department of Agriculture, January, 1918.

E. F. BENSON,

Commissioner of Agriculture.

M. L. DEAN,

Assistant Commissioner,
Chief Division of Horticulture.

APPLE PACKS

Style of Pack	No. in Box
2x1 diagonal pack 5x5 long, 3 tier deep....	45
2x1 diagonal pack 5x6 long, 3 tier deep....	50
2x2 diagonal pack 3x3 long, 4 tier deep....	48
2x2 diagonal pack 3x4 long, 4 tier deep....	56
2x2 diagonal pack 4x4 long, 4 tier deep....	64
2x2 diagonal pack 4x5 long, 4 tier deep....	72
2x2 diagonal pack 5x5 long, 4 tier deep....	80
2x2 diagonal pack 5x6 long, 4 tier deep....	88
2x2 diagonal pack 6x6 long, 4 tier deep....	96
2x2 diagonal pack 6x7 long, 4 tier deep....	104
2x2 diagonal pack 7x7 long, 4 tier deep....	112
2x2 diagonal pack 7x8 long, 4 tier deep....	120
3x2 diagonal pack 4x5 long, 5 tier deep....	113
3x2 diagonal pack 5x5 long, 5 tier deep....	125
3x2 diagonal pack 5x6 long, 5 tier deep....	138
3x2 diagonal pack 6x6 long, 5 tier deep....	150
3x2 diagonal pack 6x7 long, 5 tier deep....	163
3x2 diagonal pack 7x7 long, 5 tier deep....	175
3x2 diagonal pack 7x8 long, 5 tier deep....	188
3x2 diagonal pack 8x8 long, 5 tier deep....	200
3x2 diagonal pack 8x9 long, 5 tier deep....	213
5 straight pack 8 long, 5 tier deep....	200
5 straight pack 9 long, 5 tier deep....	225

The Standard size of an apple box shall be 18 inches long, 11 1/2 inches wide, 10 1/2 inches deep, inside measurement. (Sec. 9831, R. & B. Code.)

DIMENSIONS OF APPLE BOX MATERIALS

Ends—3/4x10 1/2x11 1/2, 2 pieces....	20 to bundle
Sides—3/4x10 1/2x19 3/4, 2 pieces....	40 to bundle
T. & B.—1/4x5 1/2x19 3/4, 4 pieces....	100 to bundle
Cleats—3/8x3/4x11 1/2, 4 pieces....	100 to bundle

32 6d nails commonly used per box.

RULES FOR ESTIMATING PAPER AND CARDBOARD

	Apples	Pears	Peaches
	lbs.	lbs.	lbs.
Wraps for packing 100 bxs.	50	50	25
Lining for packing 100 bxs.	7 1/2
Cardboard for packing 100 boxes	16

RULES FOR USE OF PAPER

Apples—	
Use 8x8 for 188-200-213-225 packs.	
Use 9x9 for 175-183-190-198-205-213 packs.	
Use 10x10 for 162-174-186-198-210 packs.	
Use 11x11 for 150-162-174-186-200 packs.	
Use 12x12 for 138-150-162-180-200 packs.	
Pears—	
Use 8x8 for 210-228-245 packs.	
Use 9x9 for 193-180-165 packs.	
Use 10x10 for 150-135-120-110-100 packs.	
Use 11x11 for 90-80-70-60 packs.	
Peaches—	
Use 8x8 for 96-90 packs.	
Use 9x9 for 84-78-72-65-60 packs.	
Use 10x10 for 55-50-45 packs.	
Use 11x11 for 40-36 packs.	
Cement Coated Nails per Keg—	
4d, 55,000; 5d, 39,700; 5 1/2d, 31,000; 6d, 23,600.	



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CORRUGATED
PAPER CONTAINERS
ECONOMY ALL ALONG
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in the initial purchase—
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in storage space—
half space of shook

in sealing—
no hammer, nails, slivers

in freight weight—
two-thirds lighter than wood

in breakage—
every side a cushion

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It shall be unlawful for any person to import into this state, sell, barter, or otherwise dispose of or offer for sale or have in his possession for the purpose of sale or barter any fruit which is or has been infected with peach mildew, peach twig borer, San Jose scale or other insect pests or the larvæ of the codling moth or peach twig borer, and the fact that any fruit bears the mark of any such scale insect or is worm eaten by any such larvæ, shall be conclusive evidence that the fruit is infected, within the meaning of this section: Provided, That nothing in this section shall be construed to prevent the grower of such infected fruit grown within the State of Washington from manufacturing the same into a by-product or selling and shipping the same to a by-product factory. (Sec. 15, Chap. 166, Session Laws 1015.)

Cabot's Quilt Insulation.

Since 1914 the price of Cork for insulation has advanced over 100 per cent. Notwithstanding the high prices of this material Cork is practically unobtainable, owing to scarcity of transportation facilities and extremely high cost

of freight rates from Spain, the home of Cork. Fortunately, Cork is not necessary for cold-storage insulation, in fact it is now in a secondary place as an insulator according to a recently completed long and exhaustive series of tests made by the U. S. Bureau of Standards, of insulators which showed Cabot's Quilt the most effective insulator, and placed Cork Board second. Other materials tested followed in order of effectiveness. From this report it will be seen that the shortage and high price of Cork for insulation purposes is not a serious matter or even one for any concern at all. Cabot's Quilt being composed of a matting of Eel grass quilted between two layers of Kraft paper, the eel grass has a tough flat fibre that forms thousands of dead-air spaces, making the ideal insulator. Eel grass grows in the sea and is composed of silicon in place of carbon that exists in plants that grow in the air, and it will therefore not rot, will not harbor insects or vermin, and will not burn. As a practical test of the value of Eel grass (Cabot's Quilt) for insulation purposes, the ice storage house of the Ashland Ice & Storage Co.

at Medford was insulated with Cabot's Quilt and produced results of far greater insulation value than had been estimated by the engineers for Cork as originally proposed. In fact, the company were so well pleased with results obtained that they state no more Cork will be considered in their future buildings, Cabot's Quilt to be the insulation material to be used. At one of the Eastern Washington storage plants six rooms were provided, the four nearest to the machines were insulated with Cork and the last two with Cabot's Quilt, with results as shown by thermometer tests covering a period of several months indicated that the rooms insulated with Cabot's Quilt showed results equal to those insulated with Cork, the cost of insulation being very much less than Cork. The same results have been secured in various parts of the world, but particularly in the United States, where Cabot's Quilt has been used as an insulator in ice and fruit-storage house and refrigerator cars.—[Adv.]

"Injurious Insects and Useful Birds" is the title of a book by F. L. Washburn, Professor of Entomology, University of Minnesota, published by J. B. Lippincott Company. This work is the result of twenty-one years of experience in economic entomology. There are chapters on modern methods in farming calculated to lessen insects and rodent injuries; insecticides and spraying; the relation of birds to agriculture—in fact the edition is filled with valuable and instructive information to the fruit grower and farmer. It is profusely illustrated, many of the illustrations in colors, which are remarkably fine.

War Savings Stamps help provide that "Force, force to the utmost, force without stint or limit, the righteous and triumphant force which shall make right the law of the world," which President Wilson says must be used against our enemies.

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 165 lbs. \$11.00
 Smoked salmon, 20 lbs. net. 3.25
 Dried True codfish, 10 lbs. 1.50

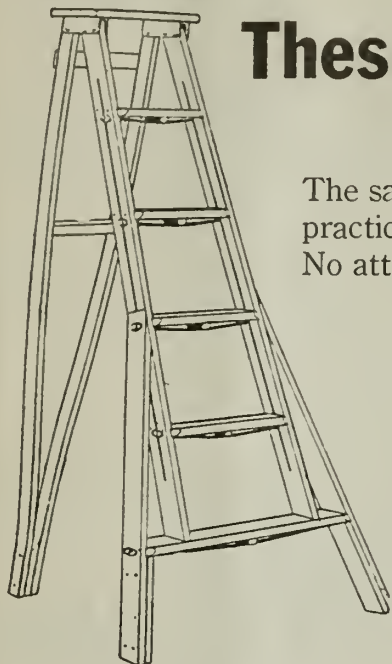
Ask for our fresh and cured fish price list.

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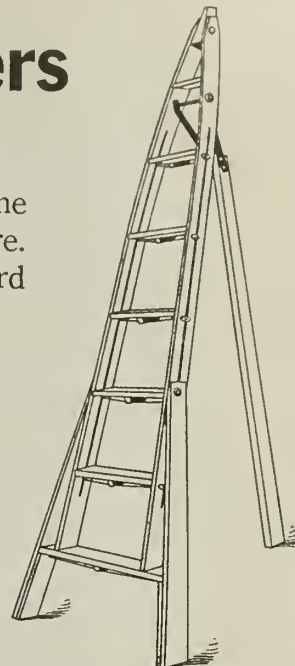
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Hardie orchard equipment will
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your old production cost.*

We issue a small folder describing more fully these two ladders and other orchard equipment.
Send for it today. Get your equipment early.

The Apex



Price per foot 45c

THE HARDIE MFG. CO.

55 North Front Street

PORTLAND, OREGON

Evaporation of Prunes, Etc.

Continued from page 7.

degrees F. Again, if the temperature at the cooler end or where the fresh fruit is being introduced is too low, there will be danger of considerable loss from brown rot and fermentation. The temperature here should be maintained at not less than from 115 to 125 degrees F. The importance of the use of standard thermometers to eliminate guess work and to give an absolute check on the conditions within the drier is apparent and cannot be over-emphasized. It is difficult to give any definite time as being ideal for evaporation of prunes. Roughly speaking, if conditions are favorable, the process will be fairly rapid and drying should be completed within thirty to thirty-six hours as a maximum. Some driers will turn out excellent fruit in as short as eighteen hours, thus obtaining maximum use of their equipment and turning out the largest tonnage for given amount of fuel consumed. If too much time is being occupied it is apparent that there is something radically wrong either in the construction of the evaporator or in the circulation of the air, provided the proper temperature is being maintained. Where the drying time is too long the finished product is less desirable. Experience alone will tell when prunes are dried sufficiently. In general, they should be black and glossy, firm to the touch, not sticky, nor flattening out under the fingers when the hand is passed over the tray; the

prunes should show no water on pressing a slightly torn section and the flesh should separate clean from the pit. When the prunes are finished they should be removed from the trays while still warm, any under-dried prunes removed to be redried and the finished fruit placed in sacks or in bins to cure. If placed in bins they should be shoveled over from time to time that the moisture content may become uniform throughout.

[Note.—While the foregoing discussion necessarily has been rather brief, a more extended review of this subject, together with suggestions on buildings and equipment, appears in Station Bulletin 145 of the Oregon Agricultural College Experiment Station, copies of which will be sent free to residents of Oregon who request them.]

War Boosts Land Clearing

One of the most notable effects of the Great World War is the casting of the limelight on the farmer. He is today one of the most important financial factors in the unprecedented situation that now exists, for food is going to help greatly in winning the war. The world's wealth is being diminished at the rate of millions monthly. The only means for restoring this wealth and putting the world back on a sound financial basis is by increased production of farm products. The soil is the original source of all wealth. American farmers alone are in a position

both to increase this wealth and market it.

Since increased production per acre of cultivated land is too slow a process to meet the world's pressing needs for more wealth and more food, it becomes obvious that the quickest solution of the problem lies in putting more land under cultivation, and the prevailing high prices of crops provide the funds to cover the expenses of clearing and draining land that now stands as a liability. The business farmer sees the opportunity and is taking advantage of it. Clearing of stump land and drainage of wet land is going on at an unprecedented rate. This is true not only on farms having large areas of hitherto waste land, but on those having waste spots that represent a fifth to a third of their available area. Almost every farm has a cut-over woodlot an acre or more in size, wet-weather ponds or wet spots varying from a fourth acre to several times as much, or meandering streams that cut corners and break into fields in the most troublesome way.

By clearing the stump land, removing the occasional stump or boulder that has been plowed around for years, draining the wet spot or pond and straightening the creek, a total of several acres can be added to the average farm, and made to produce profitable crops instead of remaining a taxable load on an otherwise good farm. The stumps may either be blasted out or pulled. But for the other work explosives are the quickest and cheapest

agency. Wet-weather ponds and wet spots in such holes may be drained downward by a properly placed deep blast. Boulders may be blasted into pieces small enough for the stone boat, and creek channels quickly straightened by blasting new channels that will confine the stream where it will waste the least possible amount of land.

Aside from the unusual financial considerations that now urge farmers to put their farms on a 100 per cent efficiency basis, pride ought to lead all of us to eliminate the unsightly stumps and boulders and get the surface water under control. It is a good principle always to maintain a place in salable condition. This is best done by removing all evidence of shiftless management, and thus please the eye as well as the bank account. Uncle Sam's fighting men are doing their part, the ship-builders are doing theirs and the farmers are certainly in a position to do theirs. With everybody doing something the war can only end one way, and that is victorious for the Allies.

Test Value of Bordeaux Mixture

Every package of commercial bordeaux mixture carries a label on which is given its content of copper. This is usually given in percentage, and by multiplying this percentage by 3.93 the result gives the amount of crystallized copper-sulphate, the bulletin explains. If the percentage is given in terms of copper oxid, multiply by 3.14; if in copper hydroxide, multiply by 2.56. In order to calculate the copper sulphate when diluted ready for application, multiply the number of pounds of the concentrated bordeaux mixture to be added to 50 gallons of water by the percentage of copper sulphate.

Physical properties, such as adhesiveness, texture, spreading quality and rate of settling, also are important factors in determining the efficiency of bordeaux mixtures. A preparation containing a large amount of copper, but coarse and granular in texture, with poor spreading and sticking qualities, cannot be expected to give good results

in cases where a good fungicide is required. To test the physical properties, dilute the mixture and place a small quantity in a glass tube, and watch the speed with which the solids settle to the bottom. If the copper is held in suspension for a great length of time the physical properties of the mixture may be regarded as good.

In order to reduce the cost of spray material some growers are using a weaker mixture than is commonly advised for the various diseases which require bordeaux treatment. When the disease attacks are mild, a bordeaux mixture containing considerably less copper sulphate than is commonly advised may give very good control, provided its physical properties are good and it is thoroughly applied, the bulletin states. When infection is severe, weak mixtures should be avoided, for the resultant loss when they are used may much more than offset the amount saved by using the proper strength. Spraying is a question of insurance and the grower must decide whether he wishes to insure his crop wholly or only partially by the use of bordeaux mixture containing sufficient copper.

Sugarless Preserving

An account appears in an English paper of a method of bottling fruits and vegetables without sugar and without cooking. The fruit is placed in any bottle that can be hermetically sealed by a rubber band; and the bottles are placed in a receptacle that will hold four or five inches of water over the top of the bottles. The water tap is allowed to run into each bottle with some force, so as to pack the fruit and wash out impurities. The tap must continue to run until the receptacle is full and running over, and when air bubbles have ceased to rise the lids must be fastened down under water. All the berry fruits have been successfully treated, although raspberries and strawberries lose their color; also peaches, nectarines, plums and cherries, besides such vegetables as peas, beans, rhubarb, tomatoes and sweet corn. It is said the

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liquor is delicious, and very little sugar need be added in cooking. So far only whole fruit has been treated.—*Producers' Review*.

War Board for Apple Crop

Called together by the governors of Oregon, Washington and Idaho, representatives of the apple-growing districts of the Northwest, including S. R. McKee and Fred P. Clark of Yakima, met in conference here the other day and appointed a war board which will put the apple industry on a war basis and co-operate with the government in winning the war.

The War Board will work in conjunction with the Fruit Growers' Agency, the headquarters of which are in Yakima. It was formed so that there could be a representative body to consider the problems common to the Northwest instead of in small sections. It will take up the problems which the Fruit Growers' Agency here is already considering, the most important of which is the harvesting of the apple crop, transporting it to market and supplying the army camps.—*Fruit Trade Journal*.

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 THAT sweaters knitted for the Red Cross are being sold by Red Cross workers.
 THAT Red Cross officials are being paid enormous salaries.
 THAT interned German prisoners are being fed four and five meals a day.
 THAT homes displaying food pledge cards will be searched by the Government.

Fight the Enemy at Home

Do not discuss in public or with strangers any knowledge you may have of troop and transport movements.

German agents and spies are everywhere, trying to gather information and bits of news about our country—our armies, ships and munitions.

German agents are striving to hinder our preparations. They make up these clever stories—the Kaiser pays his spies well to make them clever, so they will be repeated.

Get the Facts from Washington

Send for a book issued by the Committee on Public Information,

"101 GERMAN LIES"

If you find disloyal persons in your search, do not fail to report them, sending the names to the Department of Justice, Washington.

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by

Better Fruit Publishing Company

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PORTLAND, OREGON

Crop Estimates for 1918—The outlook for the 1918 apple crop in the United States, as reported July 1st by the United States Department of Agriculture, Bureau of Crop Estimates, is 64.8, in comparison of a ten-year average of 68.2. The report shows a considerable decrease over the June estimate, but this year's crop promises to be about 15 per cent higher than last year, which is due largely to a good crop in New York. The apple crop in the West will be considerably smaller, estimated at about 5,000 cars less, which is due to the fact that Idaho will probably not have over 700 cars as compared to 3,500 cars last year. Idaho suffered severely from frosts in May. Washington normally produces more than half of the Northwestern box apples, and at the present time their output is estimated at 17,000 cars, compared to 18,500 last year. Wenatchee has prospects for a splendid crop of apples. In Yakima the crop will be somewhat less than last year, but in both Wenatchee and Yakima the quality is very fine. Estimates differ in Hood River Valley from 1,200 to 1,500 cars. A light crop is predicted for other parts of Oregon. The crop in Montana is estimated at about 60 per cent of a full commercial crop. Last year the commercial crop of apples in the Northwest amounted to 23,000 cars. With a good growing season for the next few weeks the increased size of the apples will in all probability increase the present estimate.

One of the most important bulletins recently published is Farmers' Bulletin No. 984, "Farm and Home Drying of Fruits and Vegetables." It explains how to dry fruits and vegetables with and without artificial heat, with illustrations of home-made cook-stove driers, and also deals with community drying plants. The drying of fruits and vegetables is a very important means of preventing a loss of perishable foods, and every fruit grower should use these means of conserving. Copies of this bulletin can be obtained from the Division of Publications, United States Department of Agriculture, Washington, D. C. In writing for this be sure to give the number and enclose two-cent stamp.

The International Apple Shippers' Association will hold their twenty-fourth annual convention in Philadelphia, August 14, 15 and 16. The attendance promises to be very large, and the sessions will be of unusual importance. Because of the unsettled conditions many important questions will come up for consideration and every man connected with the fruit industry should plan to attend this meeting.

New Sugar Regulations.—Restrictions on the use of sugar by manufacturers are drawn much tighter by the new Food Administration regulations which became effective July 1. It is hoped that through these measures a scarcity of sugar for home consumption will be avoided. In reducing the amount allowed manufacturers the Food Administration expects the nation as a whole to go on a three-pound-per-capita-monthly ration. The less essential manufactured products, since July 1st, are allowed but 50 per cent of the normal sugar requirements. Because of lack of shipping and a decrease in the amount of sugar expected from Cuba a shortage of sugar is hardly to be avoided and everyone must conserve in every way possible. Many housewives are canning fruit without sugar, which is proving very successful. Others are using corn syrups for certain fruits. Corn syrup will not do with all fruits, but for some varieties it is found to be an improvement over granulated sugar. Many fruit growers keep bees, and some most delicious preserves are made with honey. By using substitutes for sugar the housewife will be able to fill her pantry shelf with many additional bottles of preserves than if she depends entirely on granulated sugar.

Fourth Liberty Loan.—Mr. D. O. Lively, Director of the Agricultural Division of the Twelfth Federal Reserve District, is sending out an appeal requesting everyone to save for the Fourth Liberty Loan. From all indications the Fourth Liberty Loan, which comes in October, will be the largest; the amount we are asked to make up is \$6,000,000,000, which is double any previous Liberty Loan. We are not asked to give this money—we simply loan it at a good rate of interest, and every dollar invested in Liberty Loans is a help toward winning the war. Every appeal made for funds has been oversubscribed, and with abundant crops and splendid prices the fruit growers and farmers are urged to put aside as much as they can possibly spare to swell the subscriptions to the Fourth Liberty Loan.

Box Strapping.—Every year the Northwest fruit industry suffers a serious loss from broken packages, and it seems something should be done to avoid this loss. Box strapping has been used in some districts with wonderful success, and there is no question that if the growers of the Northwest will use it more that considerable fruit will be saved. Box strapping is being used very extensively for many other commodities, and saving the shippers heavy losses.

Fear is expressed that fruit growers will suffer a serious shortage of boxes this year. Growers are urged to use baskets wherever it is possible, and while they are perhaps not so easy for storing, if the bushel baskets with the cover are used they will be found very satisfactory and save the boxes for the higher grades.

Spraying for Codling Moth.—In this issue appears elsewhere an article by Professor Childs on "The Codling Moth Situation." This is particularly timely at this time of year. During the months of August and September fruit growers in many districts will be spraying for codling moth. Every grower must study his conditions and decide how many applications of arsenate of lead it is necessary to apply. Codling-moth damage has been very severe in some districts this year and growers should give this matter prompt attention, sparing no reasonable expense to produce a clean crop.

Value of Nitrate of Soda.—There are many fruit growers who do not fully appreciate the value of nitrate of soda. Used excessively it is injurious, but if a fruit grower is in doubt as to the amount to use it will be well to consult the Experiment Station or someone of authority. Nitrate of soda contains about 15½ per cent of nitrogen in the nitrate form, which plants take up very quickly.

New Flour-Milling Regulations

With the end of the milling year on July 1, the Food Administration reviews conditions which have prevailed in the flour-milling industry and also announces new regulations to be put in effect. Under the original regulations, the millers were allowed a maximum gross profit of 25 cents per barrel, based on their annual business. The business is recognized to be a seasonal one and cannot be judged on profits determined upon a few months' operations, nor can annual profits always be accurately forecast at the beginning. Millers finding themselves at the end of the fiscal year with an amount in excess of 25 cents a barrel profit have been notified that they release themselves from the difficulty by selling a sufficient amount of flour at a nominal price to the Food Administration to liquidate any such surplus profit. Millers' accounts are audited by representatives of the Enforcement Division of the Food Administration. Under the new plan of mill regulation now being organized trade will be free but profits closely limited. Speculation will not be permitted, but no limitations are placed upon the freedom of flour mills or traders to buy or sell in any market. The mills are, however, under restrictions to reflect the Government price within the profit limitations upon flour. The whole plan has been approved by the Agricultural Advisory Committee, the board of 24 members which confers with the Food Administration on matters affecting producers.

Our men in the trenches and in the submarine chasers are doing their part. Are you doing your part? Buy War Savings Stamps to your utmost capacity.

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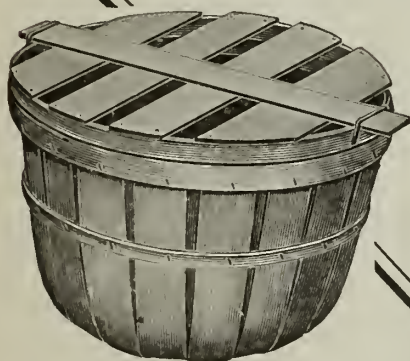
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Live Stock and the Orchard

By Professor E. J. Iddings, University of Idaho, Moscow

THERE has been in Western agricultural practice a strong tendency for several years toward specialization. In so far as this has meant for more intensive methods and for greater intelligence and skill devoted to the production of special crops or special farm products, the movement has been worthy of high commendation. Weaknesses have been found in the system, however; and the trend of today is away from extreme specialization and toward diversification in the handling of the Western agricultural farm holdings.

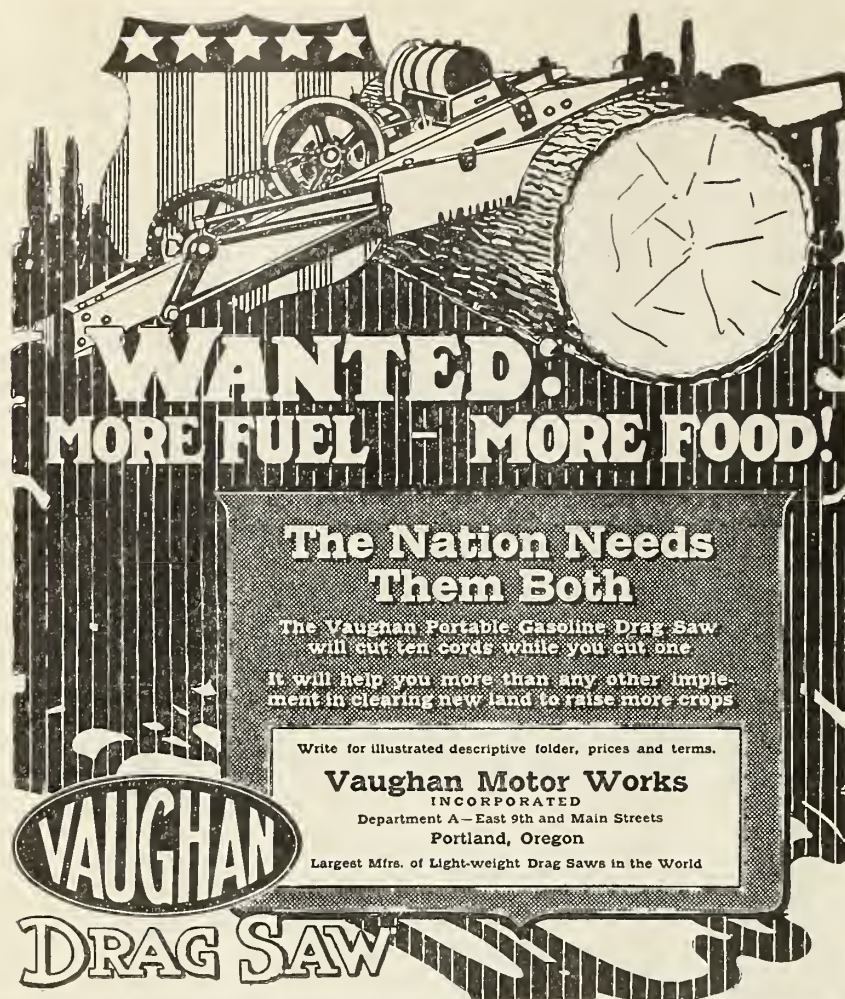
A fundamental difficulty for the man of limited means in any plan of high specialization is that he does not, and probably cannot, afford to prepare himself for a season of loss. It is not always entirely well with a specialty. Whether it is with the cereals or the forage crops of the field or the crops of the orchard, there comes a season when conditions are unfavorable and the income is small. With the fruit grower, furthermore, there may be the problem of the orchard not yet in bearing and

diversification offers at least part solution for the problem of maintaining the family until the orchard is of bearing age. Diversification, therefore, does not run counter to the best interests of the fruit grower, but on the other hand, assists in increasing his income and in staving over certain periods when the orchard is young or when, for some reason, it does not yield in abundance. A modern slogan that is now quite popular in the agricultural field is the warning not to put all the eggs in one basket.

There are four direct reasons why the orchardist should be able to find a use for live stock in connection with his main business, which is that of fruit production. In the first place the live stock furnishes an additional source of income and often contributes directly to the support of the family by furnishing animal products for home consumption. Second, live stock may be made to furnish a market for many of the crops grown by the orchardist between the rows of trees. Some of the crops, such as legumes, corn, grains of various

kinds, can, as a rule, be most profitably marketed through live stock. Third, the orchardist needs live stock for the purpose of maintaining soil fertility. We find that more and more fruit men are giving consideration to the question of fertilization and we all recognize that one of the cheapest and most efficient means of maintaining the soil in the best possible physical condition for maximum production is through the use of farm manures secured through live-stock keeping. There is a fourth reason why the orchardist should at this particular time think seriously of live-stock production. This is because the leaders of the American government today are calling for more animals and more animal products. The larger share by far of the needs of the nation in this direction will, of course, be taken care of on the ranges and on the farms. The fruit grower, however, can aid materially in this direction and if a few head of live stock were kept on the average fruit farm of the West the sum total would be of real assistance in meeting the present-day needs of America.

Granted that live-stock keeping is feasible, we may immediately consider



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the kinds of live stock that are best adapted to the fruit farm. A few horses will always be kept, but many orchardists question the advisability of trying to breed horses in connection with an orchard plant. Beef cattle are produced most successfully and profitably where there is ample room and cheap grass.

In a similar way sheep have, in past years, been regarded as better adapted to cheaper lands that are devoted largely to grazing purposes. In the past two or three years, however, hundreds of small flocks of sheep have been bought by the farmer and it will only be a short time, if the present tendency

prevails, when sheep on the Western farms will be as common as they have for years been on the farms of Ohio and Indiana. There is a possibility of using a small band of sheep in connection with the orchard. For the average man engaged in fruit growing, however, the dairy cow and the brood sow lend themselves better to his needs. These two classes of animals fit well together on the farm and make a splendid combination for use in connection with the orchard.

Those who are keeping in touch with dairy conditions of today feel that the time is not far distant when dairymen are to be paid well for their work in producing milk and butter fat. Prices have not been adequate and the dairyman has been losing money for many months. The result has been the selling of a large number of dairy cattle and we will unquestionably soon be face to face with a condition in regard to milk and butter-fat production that will mean one of two things—the dairyman will be well paid or the consumer will do without dairy products. I am familiar with one of the well-known irrigated districts of the West where many of the farmers have made a specialty of dairying. Two of the very best herds of that tract that have been tested and have a wide reputation for high production are now offered for sale. When the best of dairymen are thinking of quitting the business it is well for us to think seriously of the future. It is my opinion, confirmed by many experienced men with whom I have talked, that now is a mighty good time to get into the dairy business. Good cattle are being sold in many sections at quite reasonable prices and, as before indicated, there can be no other outcome than such prices for dairy products of all kinds as will enable the dairyman to meet all costs of keeping the herd and have a reasonable profit for his efforts.

In the orchard may be produced corn, peas and oats, and other crops for silage. The production of legume hays such as clover and alfalfa fit in well with the fertilization of the orchard and give the orchard dairyman the very best roughages for milk production. If the silo is not advisable, root crops can be grown between the tree rows to wonderful advantage. Grains may be purchased or may be grown in connection with the orchard. The combination of legume hay for roughage, of either silage or root crop for succulence, and of our Western-grown grains for concentrates, gives exactly the right kind of ration for heavy milk and butter-fat production. The grains that are needed are barley and oats, in addition to bran, which is now one of the relatively cheapest feeds that can be bought in the market.

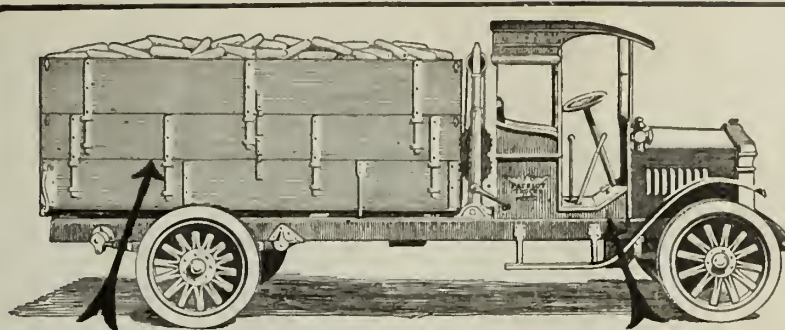
The dairy cow, therefore, fits in with the orchard plan for between-the-row crops and not only furnishes the family with highly-nutritious foodstuffs, but in addition gives the fruit grower a week by week or month by month cash income to supplement the income from fruit production.

Swine fit in well with dairy cattle because one of the best of all feeds for growing pigs is the skimmed milk which on many farms is a by-product of the dairy business. Fundamentals in successful swine production are, pasture for the brood sow and pigs; by-products such as from the dairy for supplementing other rations and for keeping down cost of production, and concentrates for finishing swine for market. All of these feeds, to a limited extent at least, can be produced in connection with the fruit farm. The pasture could be legume pasture, either alfalfa or clover. In addition special between-the-row crops, such as peas and oats, rape, kale and other crops of a similar nature, can be seeded for hog pasture. Skimmed milk, unsalable fruit, and wastes from the household may be used in connection with swine feeding. In addition there will be needed concentrates for fleshing swine for market. At present prices of feedstuffs, shorts and barley are probably the most economical feed to use in swine feeding. A nitrogenous supplement should be fed in addition, and tankage, skimmed milk or alfalfa hay are feeds valuable in this connection.

There are a large number of questions of breeding, feeding and management that should be considered in connection with dairy cattle and swine for the orchard. Time, however, does not permit extensive treatment of these problems unless there is some particular point that needs amplification. It is not only true that dairy cattle and swine are best fitted of the farm animals for use in connection with the orchard, but in addition it is peculiarly appropriate that these animals be bred at this particular time, since of all the animals of the farm the dairy cow is most efficient in that she provides more human food from one hundred pounds of feed, through her milk, than can be obtained through the means of any other animal product. Swine rank second in efficiency to the dairy cow.

There is one other branch of the livestock industry that should be mentioned at this time, one of the great industries of the American farmer. I refer to poultry raising. Poultry should not only be part of the general plan on the fruit farm, but in addition should be kept on every American farm. It is rather unfortunate that we find grain farmers as well as fruit growers going to the butcher or the groceryman for poultry that ought to be produced at home. Poultry on the fruit farm will not only furnish the family with foodstuffs among the most nutritious of all that are available for human consumption, but in addition, if properly handled, can be made to yield during the year no inconsiderable income.

The great fruit industry of the Northwest will lose nothing of its importance as a highly-organized specialty, but on the other hand will be strengthened and rendered more stable and permanent by the adoption of diversification to the extent of live-stock keeping along the lines suggested above.



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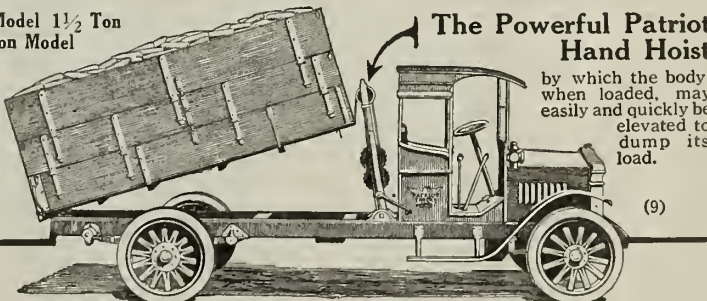
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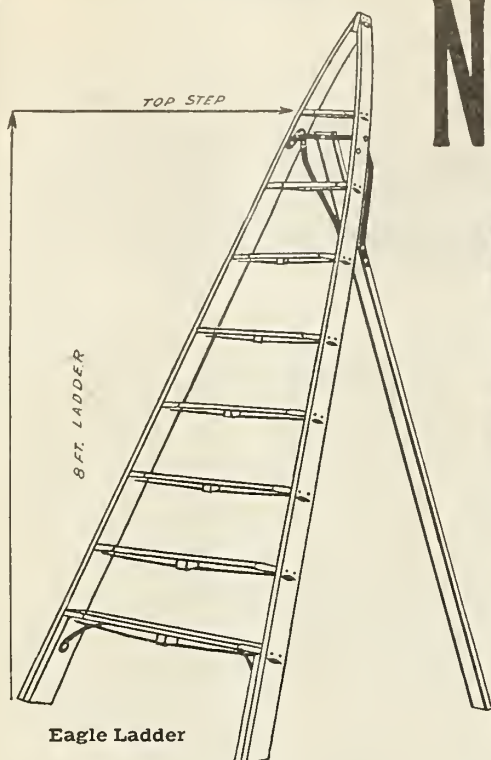
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Bottled Fruit Juices

Bottling fruit juice is a very simple process and lightens the labor of saving the "perishables." The juice of berries, cherries, apples, pears, plums, peaches, citrus fruits and watermelon may be bottled in season and are useful in many ways. These juices make delightful summer drinks and sherbets or they may be combined with fresh fruits in making gelatine desserts. The family will appreciate the delicate flavor of fruit "honeys" on griddle cakes. For this heat the fruit juice with white table syrup. Properly thickened this makes a good pudding sauce. These juices may be made into jelly in winter as needed or combined with dried fruits in making preserves.

Save all bottles. Small-mouthed bottles can be used for fruit juice, tomato paste and small peppers. Large-mouthed bottles can be used for berries, marmalades and various pickles. Wash bottles, place side-down in vessel and cover with cold water. Bring to a boil and boil 15 minutes. Drain on cloth and fill. Sterilize corks by boiling in water 15 minutes before using. Invert and drain on cloth.

Cut and crush large fruits, stem grapes, use berries as received, and use a lemon cone to extract juice of citrus fruit. Heat slowly to simmering point. The flavor is finer if fruit is not allowed to boil. Do not heat citrus fruit. Cherries may be put to a double use. After heating strain out the cherries to dry

and bottle the juice. Strain fruit through cloth bag and allow the juice to stand in a cool place to settle.

Seal bottles and fill to within one and one-half inch of the top. Put in corks lightly and set bottles on rack in a boiler, or tie down the corks and lay bottles on side with enough water to cover them. A screen at the bottom of the boiler will prevent breaking. Heat the water to the simmering point (180 degrees) and keep at this point thirty minutes. Remove the bottles, stand on end and dry the cork with a towel. When nearly cold, press cork in firmly and dip top of bottle in melted paraffin or sealing wax. A simple method of sealing is to press the cork below level of neck of bottle and cover with sealing wax. A sealing wax may be made by melting together equal parts of resin and beeswax. Store upright in a cool place.

A new bulletin has just been published by the Oregon Agricultural College, "Preliminary Report of Pear Harvesting and Storage Investigations in Rogue River Valley," by Professors C. I. Lewis, J. R. Magness and C. C. Cate. Investigations concerning the harvesting and storage of pears were conducted with several varieties of pears and from eight different orchards, representing different soil types and subject to different soil treatments. The very early picked fruit tends to be astringent and puckery, but that the fruit of the third and fourth pickings is of excellent quality and nearly uniform in flavor and texture.

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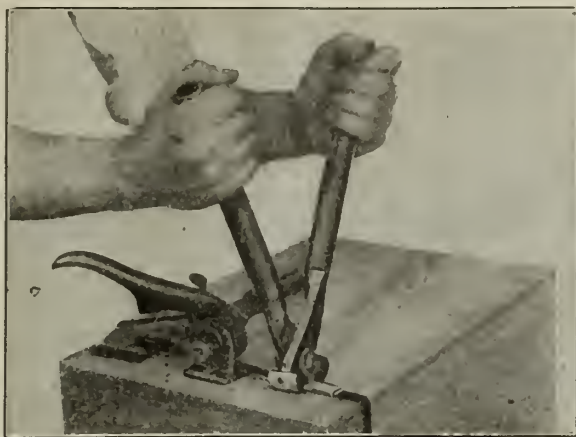
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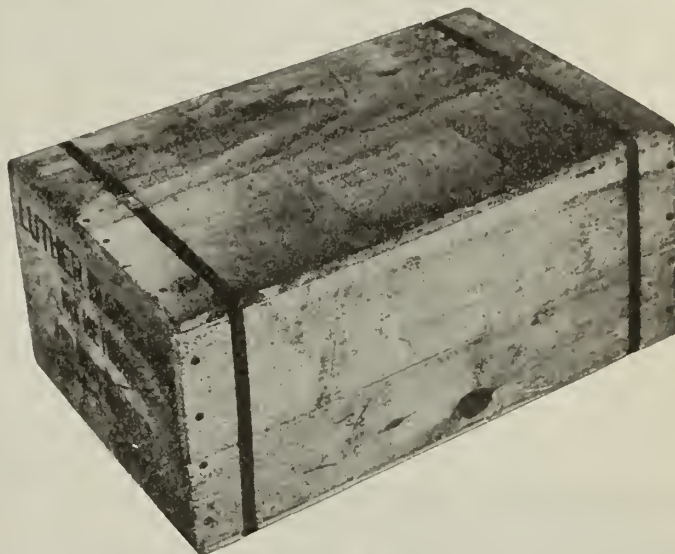
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The Valley of the Loganberry

By C. A. Lisle, Pheasant Northwest Products Company, Salem, Oregon

THERE are several hundred farmers in Oregon who do not care a hoot whether it was Luther Burbank or Judge Logan or Christopher Columbus who discovered the loganberry. They have discovered that this new hybrid fruit, this wonderberry of the fruit world, is a money-maker for them right on their own farms; and that's all the geneology they need. However, there is no doubt that the loganberry came from California. Away back in 1883, Judge John H. Logan, of Santa Cruz, certainly did plant tame red raspberries—the Texas Early—and the California Dewberry, a trailing wild blackberry, together; and the resulting hybrid was the loganberry—a fruit larger, more prolific, juicier, redder than either of the parent stocks. And there is no doubt that Burbank, the plant wizard, only a year or two later crossed the Cuthbert red raspberry and the Aughinbaugh, an improved wild blackberry, producing a hybrid berry which was at first sold under the name of the Humboldt, but later sold as the Phenomal. Mr. Burbank claims that his variety was the better of the two; and that the luscious fruit now grown in Oregon under the name Loganberry is really the Phenomenal, which he distributed by the thousands through the berry-growing section. If so, it's another case of Columbus and Amerigo Vesputius, as to who should first get

this brand upon the big thing he had discovered. Mr. Logan won the name. But the discovery itself is the really important matter.

The loganberry as produced in its native California was about the size of the dewberry or wild blackberry; an inch in length, juicy, but with the color and the delicate flavor of the raspberry.



Copyrighted by Pheasant Northwest Products Co.
JUDGE LOGAN,
The originator of the famous loganberry.

It was tried all over the United States, being disseminated by nurserymen and orchardists who believed it to be a wonderful addition to the list of civilized fruits. Almost everywhere the vigorous plant will grow, but it has failed to produce adequate returns of fruit east or south of the Cascade range in Oregon. In the Willamette Valley of Oregon, however, it has made up for its coy vagaries elsewhere. Here it grows to twice the size of the parent California berry; berries two inches long, three-quarters of an inch in diameter, each one containing a tablespoonful of the daintiest red juice—a single fruit almost a full drink for a thirsty man. Loganberry, Burbankberry, Wonderberry—here it is at its best.

The climate of the Willamette Valley has much to do with making this a berry country. The annual precipitation is about 45 inches; about 22 inches of rain fell during December, 1917, with only four or five nights during the winter that froze ice. The temperature has not in years gone lower than 10 degrees above zero. Blackberries are hardy, able to stand 30 degrees below zero in the Eastern and Middle States; raspberries, too, go through the same ferocious winters. But they must pay for their exposure, like the man who gets the rheumatism, and the pneumonia; for government statistics credit the fruits back there with a yield of hardly one-third what the loganberry reaches in Oregon—and some, like the loganberry, will not bear at all under those hard

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climatic conditions. Many epicures have never seen a real loganberry, and perhaps they never will, just as it comes in from the Oregon vines, the dew still on its cheek. It does not grow everywhere. It is too soft, too juicy for satisfactory shipping in boxes; a day is too long for it to stand after picking, to be at its best.

The berries are all picked in the early morning; never later than ten o'clock. The pickers start in at daylight, about four o'clock. The canes are thorny, necessitating gloves for

comfort, but as they are grown and trained on wire trellises, and easily reached from both sides, the picking is not bad. The plant is in reality a trailing bush or vine, like its dewberry ancestor. The vines will grow to a length of several feet in a season; these canes will bear the next year's crop. The old canes are cut away in the fall, after bearing, and burned so as to destroy any possible insect contagion. The plants are set in rows eight feet apart and eight feet in the row. They are trained up on stout, smooth wire trellises, usually running north and south so as to give sunshine on both sides of the row.

There is a reason for the popularity of the new fruit, in whatever form it may be marketed. It is a true citric product—the last great member of the citrus quartette composing the limes, the lemons, the oranges and the grapefruit. The sweetening base of grapefruit is glucose, with tartaric and tannic acids. That of the loganberry is citric acid; it is the only red citric acid fruit in the market. There are stomachs that cannot assimilate grape juice because of its tannin and glucose. If there are any that cannot take kindly to the citric acids—the lime, the lemon, the grapefruit and the loganberry—let them step sublimely solitary to the front as a new kind of horror. With the coming of prohibition in so many states, and national prohibition already in sight, the soda fountain is coming to be one of the most outstanding features of American social life. To date there is no other juice or extract product on the market that can surpass the citric acid tang of the loganberry. Millions of homes, too, now buy these delightful non-alcoholic products where once the lord of the household drank stronger beverages over the bar—and the surplus funds wouldn't go around for the family use.

The Yakima Valley Fruit Growers' Association, one of the pioneers in co-operative fruit marketing, has carried out a change voted some time ago and has become an incorporated company. It has a capital stock of \$15,000.

Combination Muffins, Using No Wheat

Method of Mixing.—Add to the cup of milk the melted fat, syrup and slightly heated egg; sift the salt, baking powder and flour together.

Use a coarse sieve so that no part of the flour is wasted. Combine the two mixture, stirring lightly without heating. Bake in a hot oven (437° F. or 225° C.) for twenty to thirty minutes, depending upon the size of the muffins. These recipes make twenty-four small muffins, three of which make a two-ounce serving, or eight very large muffins. The ground rolled oats are the same as rolled oats ground in a food chopper. When using oats, mix them with the other sifted dry ingredients. When corn meal is used, mix, do not sift, the ingredients.

Suggestions.—The wheat substitute recipes given below show that a wide variety of combinations is possible even when limited to the use of a few substitutes. All of the combinations are good. In nearly all cases a combination of substitutes makes a better product than the use of only one substitute. Muffins containing oats have a particularly pleasant flavor. Other substitutes used with buckwheat will modify the color and improve the flavor of the product. The use of molasses will also do this.

Combination Substitute Muffins.—Barley 50 per cent, oats 50 per cent, 1 cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 2 eggs, 4 teaspoons baking powder, 1 teaspoon salt, 1½ cups barley flour (4 oz.), ¾ cup ground rolled oats (4 oz.).

Combination Substitute Muffins.—Barley 75 per cent, corn 25 per cent, 1 cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 2 eggs, 4 teaspoons baking powder, 1 teaspoon salt, 2½ cups barley flour (6 oz.), ½ cup corn flour (2 oz.).

Combination Substitute Muffins.—Ground rolled oats 50 per cent, corn flour 50 per cent,

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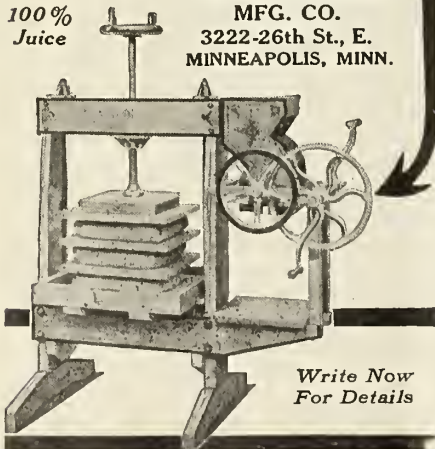
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1 cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 2 eggs, 4 teaspoons baking powder, 1 teaspoon salt, $\frac{3}{4}$ cup ground rolled oats (4 oz.), 1 cup corn flour (4 oz.).

Combination Substitute Muffins.—Oatmeal 25 per cent, corn flour 75 per cent, 1 cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 2 eggs, 4 teaspoons baking powder, 1 teaspoon salt, $\frac{1}{2}$ cup oatmeal (ground, 2 oz.), $1\frac{1}{2}$ cups corn flour (6 oz.).

Combination Substitute Muffins.—Barley flour 50 per cent, corn flour 50 per cent, 1 cup milk, 1 tablespoon fat, 2 tablespoons syrup, 2 eggs, 4 teaspoons baking powder, 1 teaspoon salt, $1\frac{1}{2}$ cups barley flour (4 oz.), 1 cup corn flour (4 oz.).

As to Caretaker's Duty of an Irrigated Orchard

Editor Better Fruit:

As a subscriber I wish you would publish for the general information of your readers what is generally understood to be the duty of a caretaker of an irrigated orchard. I have such an orchard.

Many of your readers have, and many of your readers are employed to "take care" of other people's orchards.

Don't say it depends on one's contract, for too often the contract is verbal and is understood to mean "general care," but what constitutes "general care"?

To be specific, pruning, picking up brush, cutting watersprouts, irrigating, cultivating, thinning fruit, spraying, propping up trees, storing props, teaming all supplies to orchard tract, labor in keeping fences repaired, etc., etc.

I am signing my letter, but believe you can publish your views without making the matter personal in any way; but the man who pays to have his orchard developed with the expectation of moving onto the job when the orchard becomes productive is certainly stung early and often.

Yours truly,

SUBSCRIBER.

Answer.—The term "care" or general care as applied to orcharding has been a source of considerable controversy all over the United States. This has been especially true of many development companies who have undertaken to develop tracts belonging to non-resident owners. A view of such tracts leads one to believe that various interpretations were put on the contracts. Probably it would have been much better if the contracts had been more

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specific and perhaps designated to a certain extent the kind of care. But even if they did not, it is doubtful if the poor care which has been given some tracts was warranted. In other words, the people selling the land were carrying the impression that they were going to plant and develop an orchard, something which would be active and something which would be worth while owning. The Standard dictionary say that "Care means responsible charge or oversight; often implying a concern for safety and prosperity, watchful regard and attention with a view to safety and protection." One who has purchased an orchard tract would have a right to expect, if the term care had been used, that it meant scientific orchard care, and that someone would have charge of the developing who is qualified by experience or work in horticulture, to develop the orchards. Care should mean that we have good soil care, proper tillage, irrigation, maintaining the fertility of the soil, handling of cover crops, proper pruning and spraying, the control and fighting of rodents such as rabbits and graydiggers; keeping up the fences so as to keep the stock from molesting the trees and so handling the orchard that the trees could be brought up to a high standard of productivity. There is no doubt in my mind but that those who have the contracts written want to carry this thought to the purchaser, and if this is so, they should be held responsible. Some companies have lived up to this interpretation of care, and others have taken very broad interpretations of the word care. It might imply that a caretaker simply lived on the place, in fact in some cases the orchards were not even plowed. It is to be regretted that American horticulture has had to pass through such a period of misunderstanding.

Many purchasers feel dissatisfied and rightly so. There is another phase of the question, however, and that is that some of the purchasers have been unreasonable. They have expected a caretaker to overcome climatic difficulties, they have been dissatisfied if a single tree died, have been dissatisfied if there is the least sign of insect or disease attack on trees. In other words, they expect the trees to be perfect. It probably would be well for managers and owners of orchard tracts to come to a better understanding, perhaps draw up new types of contracts in which is stated more specifically what good orchard care really means.

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The Prune Industry in Douglas County

By Earl Percy, County Horticulturist Douglas County

THE remarkable thing about the prune industry in Douglas County is that its growth has been steady and continuous from the start. It has never been a boom business since old John Hall, Hans Weaver and others back in 1877 planted the first orchards at Myrtle Creek and laid the foundation for the county's largest industry. In 1916 10,000,000 pounds of dried prunes were produced which was one-fourth of the total crop of the State. Douglas is the only county still growing any great quantities of Petites. Probably 50 per cent of this year's crop will be the French or Petite prune, long discarded by the other prune growing sections of the State. In the Myrtle Creek District this variety is at its best netting the growers an average profit in excess of the Italians, acre for acre. The original plantings were divided about equally between Italians, Petites and Silvers. The last named variety, while in many ways a fine fruit, rapidly lost its place in the fruit world, due to several weaknesses chief of which was the fact that the tree tended to bear itself to death. It is very susceptible to winter kill, sour sap, heart rot and various other troubles. Nevertheless it was but a very few years ago that a packing company at Roseburg shipped a full carload of Silvers east.

In 1891 the Report of the State Board of Horticulture contained this statement: "The man who will plant a prune orchard sufficiently large to enable him to ship in carloads lays the foundation for a fortune far more certain of realization and in less time than any other business in which he may embark

with the same capital and labor." Many comfortable fortunes have been thus laid in the Umpqua Valley. Prune orchards are practically the only type of real estate that is off the market. This is not due to bumper crops or to the unusual yield of any one year, but to a steady, continuous prosperity among the prune growers, large or small.

Prune growing occupies the same relation to Douglas County that apples do to Hood River. Wherever land is farmed one will find prune orchards. The county is cut up into many small shoe-string valleys, extending for 60 miles from Yoncalla to Canyonville. With the exception of the Riddle and Myrtle Creek districts, there are no large prune growing districts. The total acreage that produces 10,000,000 pounds of dried prunes is made up from the many small plantings scattered throughout the county.

One of the best features of the Oregon Prune is its adaptability to a wide range of soils and its remarkable free-

dom from pests and diseases. Here it grows on every possible combination of soil, slope and fertility, from the black sticky to the rich bottom land along the Umpqua river. It is true that it has an optimum range for best success and it is to be marvelled at that it grows at all in some of the wet, unfavorable locations where it is found. Nature wisely failed to provide a host of pests and diseases for the homely prune. No other fruit under the sun could stand the neglect and abuse that the prune receives and still remain the most profitable branch of horticulture in the Northwest. If the prune growers were suddenly forced to study and practice the principles of entomology, pathology, soil chemistry, meteorology and marketing; and do all those things that go to make apple and pear culture so costly and yet so necessary to success, it is probable that many of them would go back to general farming for a livelihood. The prune orchards that consist-

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ently produce optimum or maximum crops, are few and far between.

The outstanding feature of the prune industry from observations made in an official capacity in many of the prune orchards of the State, is that in the competition of the future, the young orchards planted in the last 5 or 6 years should far outdistance the old tracts both in annual yield and in old age. Left to itself, the prune tree will deteriorate very rapidly. No orchard will improve by neglect. A prune orchard, however, should not be old at 25 years and on the decline, but should be in its prime and growing its largest crops at that age because of its great spread of fruiting wood and the development of its root system. The fact remains that a 6 or 7 per cent replant each year would not hold the total production steady, because the older orchards are dropping off very fast regardless of the fact that most of them are less than 30 years old. There is an orchard in this county 43 years old that is still bearing good crops, whereas another tract just over the fence on identically the same type of soil, at 25 years is gradually dying out.

Most of the old trees are suffering from heart rot, which is year by year encroaching upon the sap-wood and thereby weakening the tree until it has neither the strength nor the inclination to set large crops of prunes. Heart rot is caused by several species of fungi which gain entrance through the unprotected wounds and stubs left by the pruner and insidiously extend their operations until the tree either dies, or is blown over, or is weighted down by a crop of fruit. There is no practical way to cure heart rot. The only thing that

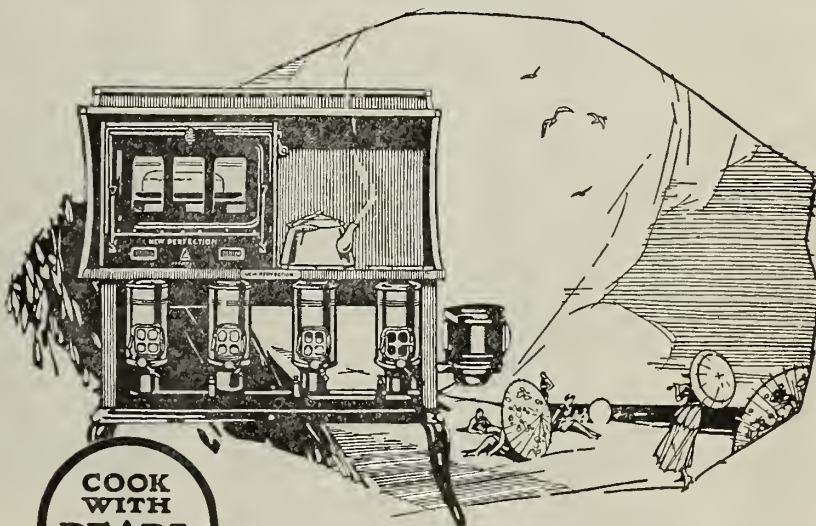


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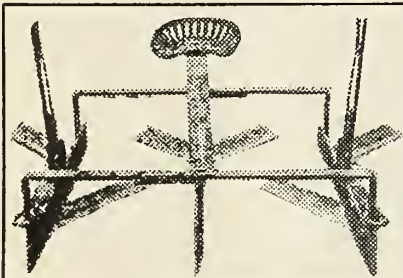
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can be done is to protect the young trees from it. If possible form the head of the tree so that none of the main limbs will have to be cut off in later years as the head becomes thick. The wounds of course can be protected by a coat of paint, wax or asphalt until it heals over. This application will likely need be followed by another during the summer to prevent the spores from gaining entrance through the cracks in the cuts. The reason why the older orchard is in a fair state of health while the 25-year-old tract is dying is due to the method of pruning, or rather of not pruning, practiced in the early days of prune growing. None of the main or large limbs have ever been removed from the 43-year-old orchard, while the other has been pruned without regard to heart rot.

The grower who religiously prunes, sprays and cultivates in the most approved orthodox manner, aside from the facts of the presence of heart rot and poor location, may still fall far short of maximum crops year by year. His trouble is apt to be due to moisture content or fertility or to both, because a tree that is not receiving proper nourishment cannot function at its best. This is clear to anyone acquainted with the principles of Plant Physiology. As the years go by, the fertility and moisture holding content should logically be improved and not allowed to decrease, because as the trees become larger they naturally become a greater strain on the soil. Roots of a 7-year-old Italian tree big around as a lead pencil have been dug up 18 feet from the trunk. The feeding area is greater than generally known and to produce regular crops of 2 tons dried this balance must be maintained. Cover cropping is the cheapest fertilizer and soil improver that we have, but unfortunately the vetches cannot be made to grow every year in the Northwest. Where accessible, manures are very valuable. Mr. Russel, of Washougal, in rejuvenating an old prune orchard by applying 10 tons of sheep manure to the acre for three years, succeeded in making the trees net \$300 an acre. Some growers in Douglas county are irrigating this year and the results will be watched with interest, because there is a suspicion that Western Oregon in reality is a semi-arid district, at least the last two seasons warrant that conclusion. Others are experimenting with nitrate of soda.

The fact that prune culture is not considered as high grade a form of Horticulture as apple, pear or citrus culture is due largely to the nature of its development in the Northwest. When Seth Lewelling, in 1859, near Milwaukie planted 5 acres to Italian prunes, he intended to supply the California markets which were at that time paying fabulous prices for fresh and dried fruits. Today, or before the war, we were shipping prunes to all of the main markets of the world from Moscow to Buenos Aires. Commercial plantings began in Oregon in the early 70s, after the excellence of the fruit in Lewelling's orchard became known for its

quality, size, flavor and fine drying characteristics. Dr. J. R. Cardwell, an enthusiastic horticulturist probably set the first orchard of commercial importance near Portland. During the next ten years the industry became well established in Polk, Yamhill and Douglas Counties, in Oregon, and in Clarke County, Washington.

A promoter named Evans from California succeeded in interesting several farmers, Hans Weaver, John Weaver, J. J. Chadwick, Geo. Dement, John Isner and John Hall, at Myrtle Creek, in a patent dryer in 1877, and sold them prune trees to get the business started, but it developed that he knew far more about promoting than he did about prune drying and the growers were soon left to work out their own salvation. Their greatest trouble was to dry the crop. This was an entirely new business in Oregon and it is recorded that for two years the crop lay on the ground to rot. Drying was carried through the experimental stage however, until several types of dryers were developed that proved successful. The tunnel dryer is in greatest use now. Judge G. W. Riddle has a steam dryer which has over five miles of pipes in it.

There was considerable trouble in marketing the fruit in the early days. The markets of the East were not eager to buy the prunes in dirty gunny sacks. Probably the greatest single factor in the development of the prune industry must be credited to the processor. The product was sterilized and packed in clean boxes such as the trade desired. With that came extensive advertising until today the Oregon Prune is favorably known wherever people eat fruit. With the expansion of the market the growth of the industry in Douglas county has been steady, until it has become the safest and most profitable business of the county.

Yields of 2 to 3 tons are not at all uncommon in the Valley of the Umpqua. Judge A. F. Stearns of Oakland, dried 70 tons of Italians from 25 acres in 1916. Dr. Hoover of Roseburg, grew over three tons to the acre on 30 year old trees. The young orchards are doing well, too. A. F. Hoffman received \$1200 for the crop on 4½ acres eight years old. The name of Weaver in the Myrtle Creek district is a synonym for prunes. Ed. Weaver dried 150,000 pounds of Petites on 30 acres in 1917. "Success in prune growing," says Mr. Weaver, "depends on the application of good common sense, providing you have the right kind of soil to begin with. Always cultivate before bloom and plow away from the trees. Mounding the dirt around the trees is the surest way I know to prevent a crop from setting."

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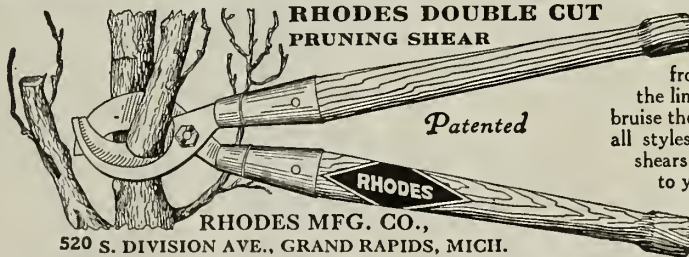
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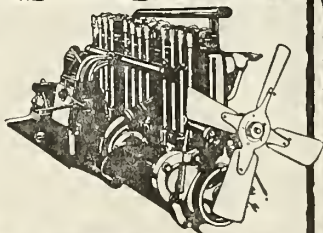
quently used, which can be so made as to receive the fruit automatically from a gravity line and take same to an upper floor and automatically run it off onto another gravity line; so that only two men are required for this operation—one at the first end of the gravity line on the floor below and the other at the final place of delivery. Likewise, it may be desired to run the apples to the basement or from any upper floor to a lower floor. This is very easily accomplished by means of a spiral or a straight chute. These, too, can be so arranged that the apples will automatically run into them from a gravity line, and likewise at the lower floor the apples will run out of the spiral chute and off onto a gravity conveyor automatically and without attention and be carried to any part of the floor desired. What, too, should be noted—no power is used in the spirals or the gravities—nature does the work; and besides, they are entirely safe, because with the absence of unyielding power, no accidents can occur, which is quite the contrary with the ordinary power conveyor.

Last year, and the year before, many warehouses in the Northwest were equipped with conveyors, among which might be mentioned Baker Langdon Orchard Co., Walla Walla, Washington; Early Fruit Co., Spokane, Washington; Yakima Valley Fruit Growers' Association, Yakima, Washington; Cashmere Fruit Growers' Union, Cashmere, Washington; Okanogan Fruit Growers' Union, Okanogan, Washington. And this season many others, having observed the successful operation of conveyors in these plants, are arranging for complete conveying equipments.

While arrangements and conditions of each packing house vary the system, the fundamental principle is the same. At the receiving doors there are lines of conveyors on which the orchardist unloads his boxes and here they are checked in. From these lines they may be sorted or delivered without further handling to the point where they are wanted. Along the sorting machines lines of gravity conveyors carry the fruit, packed but uncovered, to the nailing machines. The nailers, in turn, place the boxes on another line of conveyors which takes them to the checking table, from which they are carried upstairs by means of an inclined elevator, or downstairs through a spiral chute, or directly into the car, or to any part of the same floor on regular gravity lines. And so, the warehouse man and packer can easily see how a properly laid out conveying system will do away with handling and trucking and with much labor and confusion, and at the same time do the work quicker, more systematically and at less expense and enable him to give everybody service and keep everybody happy; at any rate, it will pay to investigate.

Pledge yourself to save to the utmost and to buy a definite amount of War Savings Stamps each month.

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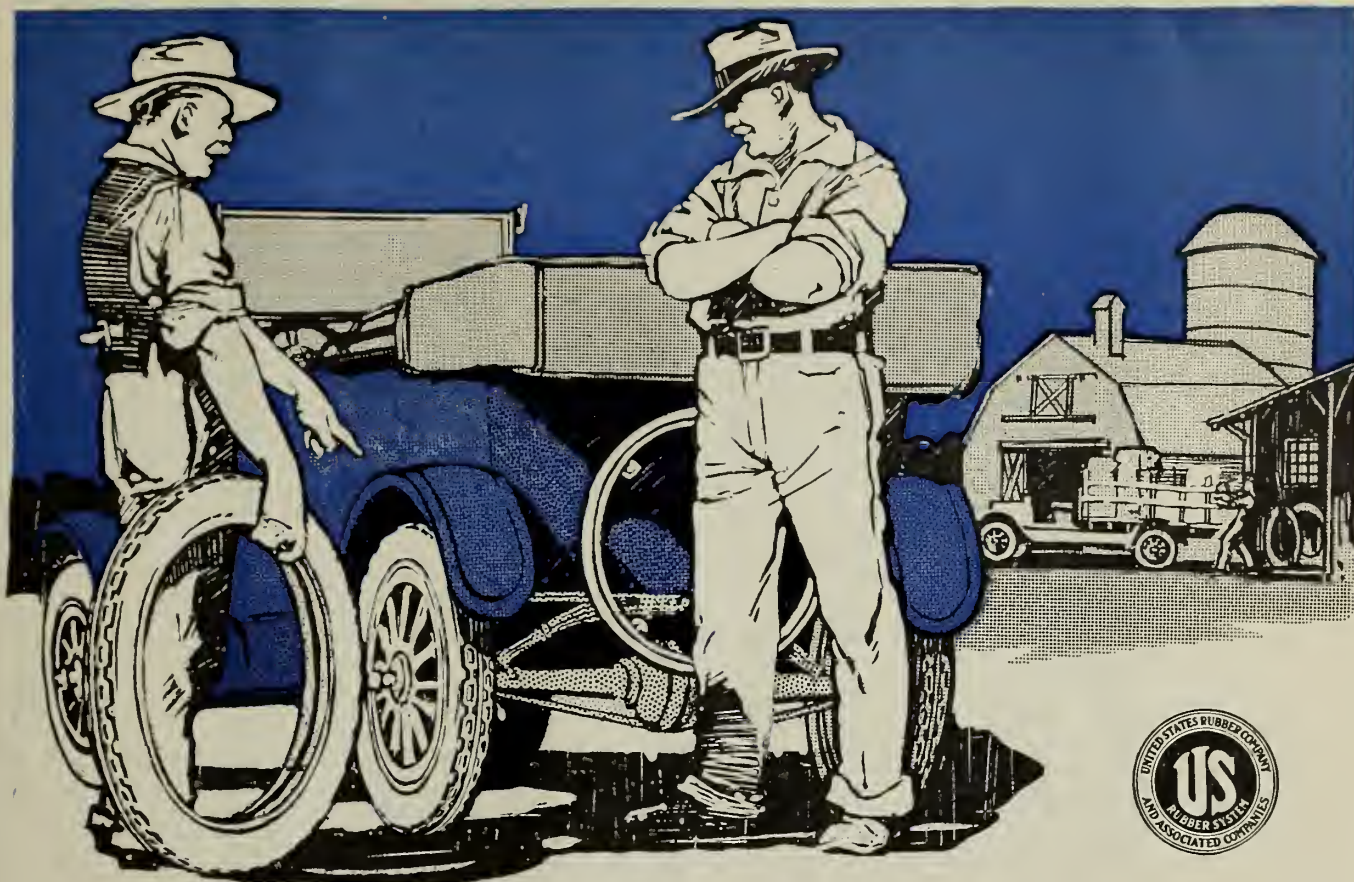
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Zerolene keeps the engine young—full-powered, smooth-running, and economical in fuel and oil consumption—because it is correctly refined from selected California asphalt-base crude. Gives better lubrication with less carbon. Made in several consistencies. Get our Correct Lubrication Chart covering your car.

At dealers everywhere and Standard Oil Service Stations.

STANDARD OIL COMPANY
(California)

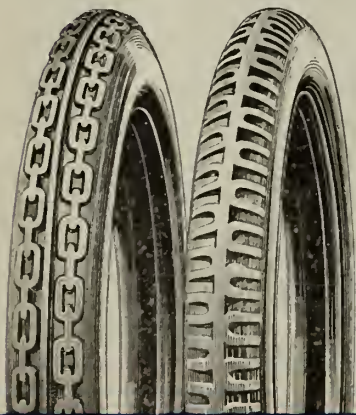


Facts vs. Guess-work

United States
Tires
are Good Tires

'Chain'

'Usco'



"THIS car is as much a part of my farm as the barn is. It's working every day. It's a business proposition. So I'm going to make her upkeep strictly business.

"These United States Tires are a beginning. I've been investigating and gathering evidence all over the country. I'll bet I've talked to a hundred farmers who drive cars. The majority vote is United States Tires for long wear and economy. It was unanimous with the fellows who are keeping books on their cars and finding out what it costs them to ride a mile or a hundred.

"You see I'm starting on the idea that quality pays in the long run. I'm fitting the car out right to begin with. That's the way to shove down the little old-cost-per-mile at the end of the year."

Any United States Sales and Service Depot dealer will cheerfully aid you in selecting the right tire for your car and your roads.

There are treads and types for every purpose—all United States quality.

The World

Our Orchard

PRIVATE SALE vs. AUCTION

Experience has demonstrated clearly the manifold advantages of sale by private treaty, which method is now acknowledged on all sides to show more satisfactory results than the auction.

Assuming that you are anxious to dispose of your fruit in the best possible manner and to the best possible advantage we, as **PRIVATE SALESMEN**, have no hesitancy in laying our claim before you.

Whether you prefer to sell your fruit on an outright f.o.b. basis or prefer to have it handled for your own account on a consignment basis, both of which methods are entirely agreeable to us, the fact remains that the firm of

Steinhardt & Kelly

**101 PARK PLACE
NEW YORK**

is in position to give you the best possible service. Our reputation of
“Never Having Turned Down A Car”

although practically 90% of our business is done on an outright purchase basis, is a record of which we feel deservedly proud.

Our Market

The World